Vol. 903 Number 1

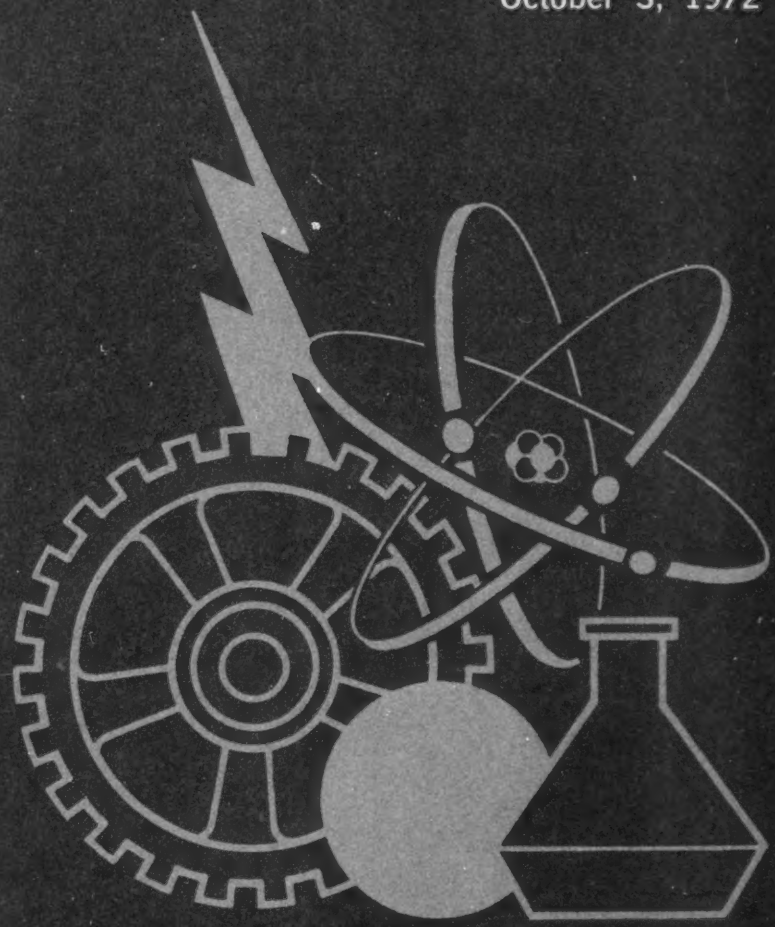
OFFICIAL GAZETTE

of the
UNITED STATES PATENT OFFICE

A UNITED STATES DEPARTMENT OF COMMERCE PUBLICATION

PATENTS

October 3, 1972



U. S. DEPARTMENT OF COMMERCE
Patent Office

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OFFICIAL GAZETTE of the UNITED STATES PATENT OFFICE

October 3, 1972 Volume 903 Number 1

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PATENT OFFICE NOTICES

Patent Numbers For Which No Patents Exist

Issue of October 3, 1972

3,694,822	3,695,272	3,695,682	3,696,119
3,694,824	3,695,282	3,695,683	3,696,124
3,694,827	3,695,285	3,695,686	3,696,139
3,694,833	3,695,292	3,695,704	3,696,140
3,694,841	3,695,294	3,695,705	3,696,148
3,694,842	3,695,305	3,695,712	3,696,149
3,694,849	3,695,312	3,695,738	3,696,151
3,694,850	3,695,313	3,695,740	3,696,159
3,694,854	3,695,328	3,695,748	3,696,174
3,694,874	3,695,343	3,695,759	3,696,175
3,694,877	3,695,348	3,695,773	3,696,178
3,694,878	3,695,353	3,695,782	3,696,190
3,694,886	3,695,357	3,695,793	3,696,196
3,694,900	3,695,359	3,695,794	3,696,205
3,694,901	3,695,372	3,695,798	3,696,208
3,694,904	3,695,380	3,695,803	3,696,209
3,694,910	3,695,393	3,695,843	3,696,211
3,694,917	3,695,400	3,695,846	3,696,212
3,694,920	3,695,413	3,695,852	3,696,213
3,694,922	3,695,420	3,695,857	3,696,214
3,694,929	3,695,425	3,695,862	3,696,215
3,694,938	3,695,428	3,695,872	3,696,221
3,694,941	3,695,429	3,695,873	3,696,231
3,694,946	3,695,431	3,695,913	3,696,256
3,694,948	3,695,435	3,695,914	3,696,267
3,694,956	3,695,436	3,695,930	3,696,275
3,694,980	3,695,442	3,695,940	3,696,280
3,695,000	3,695,454	3,695,943	3,696,284
3,695,016	3,695,465	3,695,957	3,696,289
3,695,028	3,695,470	3,695,958	3,696,300
3,695,030	3,695,511	3,695,963	3,696,327
3,695,039	3,695,530	3,695,973	3,696,330
3,695,061	3,695,536	3,695,978	3,696,336
3,695,069	3,695,537	3,695,979	3,696,337
3,695,077	3,695,547	3,695,986	3,696,339
3,695,085	3,695,560	3,695,991	3,696,342
3,695,118	3,695,580	3,695,997	3,696,355
3,695,169	3,695,581	3,695,998	3,696,361
3,695,184	3,695,584	3,696,001	3,696,370
3,695,191	3,695,588	3,696,016	3,696,375
3,695,202	3,695,596	3,696,018	3,696,376
3,695,206	3,695,613	3,696,045	3,696,405
3,695,214	3,695,653	3,696,055	3,696,406
3,695,227	3,695,668	3,696,070	3,696,413
3,695,236	3,695,675	3,696,073	3,696,420
3,695,251	3,695,677	3,696,105	3,696,423

Disclaimers

3,632,976.—*Masao Ando*, Yokohamashi, Japan. DIFFERENTIAL AND/OR DISCONTINUOUS HEATING ALONG PIPELINES BY HEAT-GENERATING PIPES UTILIZING SKIN-EFFECT CURRENT. Patent dated Jan. 4, 1972.. Disclaimer filed Aug. 10, 1972, by the assignee, *Chisso Corporation*.

Hereby disclaims the portion of the term of the patent subsequent to Dec. 20, 1983.

3,637,491.—*Ross M. Hedrick*, St. Louis, Mo. and *David T. Mowry*, Yokohama, Japan. CLARIFICATION OF WATER. Patent dated Jan. 25, 1972. Disclaimer filed Sept. 20, 1971, by the assignee, *Monsanto Company*.

Hereby disclaims the portion of the term of the patent subsequent to June 22, 1987.

3,666,258.—*Paul Emile Gaudry*, Laval des Rapides, Quebec, Canada. ELECTRIC MOTOR BRUSH SPRING. Patent dated May 30, 1972. Disclaimer filed Sept. 5, 1972, by the assignee, *Consolidated Foods Corporation*.

Hereby disclaims the entire term of said patent.

3,670,073.—*Thomas H. Shepherd*, Hopewell, and *Francis E. Gould*, Princeton, N.J. HYDROPHILIC POLYMER CONTAINING AEROSOL. Patent dated June 13, 1972. Disclaimer filed Sept. 1, 1972, by the assignee, *National Patent Development Corporation*.

Hereby disclaims the portion of the term of the patent subsequent to Apr. 13, 1988 .

3,674,784.—*J. Alan Webber*, Indianapolis, Ind. 3-FORMYL CEPHALOSPORIN SULFOXIDES. Patent dated July 4, 1972. Disclaimer filed Mar. 13, 1972, by the inventor, the assignee, *Eli Lilly and Company*, assenting.

Hereby disclaims the portion of the term of the patent subsequent to Aug. 3, 1988.

Certificates of Correction for the Week of Oct. 3, 1972

Re. 27,307	3,626,432	3,644,293	3,656,855
Re. 27,340	3,627,792	3,644,298	3,656,870
3,191,790	3,630,833	3,644,378	3,656,957
3,448,973	3,631,062	3,644,411	3,657,083
3,533,480	3,631,258	3,644,429	3,657,142
3,552,335	3,631,954	3,644,613	3,657,257
3,558,738	3,632,552	3,645,776	3,657,267
3,567,458	3,633,652	3,645,988	3,657,772
3,572,730	3,634,572	3,646,072	3,658,461
3,578,213	3,635,848	3,646,352	3,658,562
3,581,898	3,636,272	3,646,953	3,658,690
3,582,674	3,636,285	3,647,525	3,658,970
3,582,961	3,636,565	3,648,244	3,659,388
3,590,034	3,636,567	3,649,257	3,659,675
3,590,209	3,636,842	3,649,889	3,659,744
3,593,091	3,636,981	3,650,004	3,659,904
3,593,264	3,637,015	3,650,276	3,661,429
3,593,533	3,637,153	3,650,644	3,661,680
3,595,334	3,637,207	3,650,650	3,661,860
3,601,891	3,637,309	3,650,694	3,662,178
3,601,906	3,637,330	3,650,799	3,662,860
3,603,026	3,637,335	3,650,802	3,662,937
3,604,070	3,637,370	3,650,898	3,663,525
3,606,131	3,637,389	3,650,945	3,663,680
3,607,522	3,637,444	3,651,343	3,663,845
3,607,864	3,637,452	3,651,611	3,664,114
3,609,773	3,637,487	3,651,798	3,664,613
3,610,472	3,637,520	3,652,083	3,665,081
3,612,686	3,637,714	3,652,258	3,665,650
3,612,843	3,637,956	3,652,621	3,665,891
3,613,556	3,637,963	3,653,241	3,665,940
3,616,680	3,638,225	3,653,288	3,666,063
3,617,633	3,638,488	3,653,542	3,666,701
3,618,275	3,640,457	3,653,634	3,667,572
3,621,217	3,640,722	3,653,797	3,667,939
3,621,221	3,640,870	3,654,751	3,668,307
3,622,559	3,641,258	3,655,275	3,668,449
3,622,690	3,641,601	3,655,599	3,668,635
3,623,151	3,642,502	3,655,602	3,669,826
3,623,377	3,642,931	3,655,646	3,670,503
3,624,044	3,643,216	3,655,809	3,670,721
3,624,158	3,643,565	3,656,335	3,670,899
3,624,176	3,643,598	3,656,357	3,671,149
3,624,236	3,644,051	3,656,449	3,671,684
3,624,978	3,644,120	3,656,529	
3,625,631	3,644,246	3,656,764	

PATENT EXAMINING CORPS

R. A. WAHL, Assistant Commissioner
WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF SEPTEMBER 19, 1972

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	7-19-71
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director. Heterocyclic; Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	6-01-71
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—L. J. BERCOVITZ, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	8-09-71
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. P. KENT, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	7-06-71
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—Director (Vacant). Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	4-15-71
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	1-26-72
SPECIAL LAWS ADMINISTRATION, GROUP 220—R. L. CAMPBELL, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	6-16-71
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	10-01-71
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—Director (Vacant). Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	6-03-71
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	10-18-71
DESIGNS, GROUP 290—R. L. CAMPBELL, Director. Industrial Arts: Household, Personal and Fine Arts.	3-11-71
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—A. BERLIN, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	8-03-71
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus: Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders Woodworking; Tools; Cutlery; Jacks.	6-24-71
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGG, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	8-18-71
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—M. M. NEWMAN, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	9-30-71
MISCELLANEOUS CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—T. J. HICKEY, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	7-29-71

Expiration of patents: The patents within the range of numbers indicated below expire during October 1972, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,719,294 to 2,721,998, inclusive
Plant Patents..... Numbers 1,423 to 1,426, inclusive

DEFENSIVE PUBLICATIONS

PUBLISHED OCTOBER 3, 1972

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O.G. 687. The abstracts of Defensive Publication applications are identified by distinctly numbered series and are arranged chronologically. The heading of each abstract indicates the number of pages of specification, including claims and sheets of drawings contained in the application as originally filed. The files of these applications are available to the public for inspection and reproduction may be purchased for 30 cents a sheet.

Defensive Publication applications have not been examined as to the merits of alleged invention. The Patent Office makes no assertion as to the novelty of the disclosed subject matter.

T903,001

TERPOLYMER COMPOSITIONS

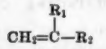
Oliver deS. Deex, Clayton, and William F. Fallwell, Jr., St. Louis, Mo., assignors to Monsanto Company, St. Louis, Mo.

Original application May 29, 1968, Ser. No. 732,887, now Patent No. 3,637,566, dated Jan. 25, 1972. Divided and this application June 19, 1970, Ser. No. 59,803

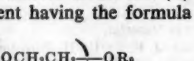
Int. Cl. D21h *1/28*
U.S. Cl. 117—155 UA

No Drawing. 14 Pages Specification

This invention relates to terpolymers containing (a) 2 to 60 weight percent of an olefinic unsaturated hydrocarbon compound, (b) 40 to 98 weight percent of a vinyl type compound having the formula



wherein R_1 is hydrogen, methyl or halogen and R_2 is hydrogen or a carbonyl type residue such as $—COOR_3$ or $—OCOR_4$ where R_3 is an alkyl radical having 1 to 12 carbon atoms, and R_4 is an alkyl radical having 1 to 4 carbon atoms, —CN, phenyl —Cl and —Br, and (c) 0.1 to 40 weight percent of a partial ester of (1) an α-β-olefinic unsaturated polycarboxylic acid or anhydride thereof having from 4 to 10 carbon atoms and (2) a hydroxyl nonionic dispersing agent having the formula



wherein R_9 is any hydrophobic group having 6 to 30 carbon atoms or more in the hydrophobic group and n is an average number of from about 0 to about 60. These compositions are useful as adhesives, extrusion coatings or gasketing material. In latex form, they are especially useful as adhesive binders in mineral pigment coating compositions for paper, paperboard and paper products. A specific example is a terpolymer of (a) ethylene, (b) vinyl chloride, and (c) ethoxylated tridecyl maleate half ester containing 9 to 10 ethoxy groups in the ester. They may also be applied as the only paper treating agent to improve the barrier properties and grease resistance of the paper or paperboard.

T903,002

RECOVERING VALUES FROM MONOVINYLACETYLENE CATALYST TARS

Alfred P. Kottenhahn, Louisville, Ky., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Jan. 7, 1971, Ser. No. 104,748

Int. Cl. B01d *11/04*; C01g *3/04*
U.S. Cl. 23—312

No Drawing. 14 Pages Specification

Cuprous chloride is recovered from tarred catalyst formed in the presence of a reaction control diluent during the catalytic dimerization of acetylene to monovinylacetylene. Water, preferably having an aliphatic nitrile compound such as acetonitrile dissolved therein, is mixed with the tarred catalyst to form a tar concentrate containing the values to be recovered. The tar concentrate is mixed with a concentrated aqueous solution of monomethylamine hydrochloride (preferably 20–70%) to form a two-phase system. One phase is aqueous and contains the monomethylamine hydrochloride and a substantial portion of the cuprous chloride which was in the tar, and the other is a tar phase and contains reaction control diluent, tar formed during the dimerization reaction, and any remaining cuprous chloride. The phases are separated and normally 50–60% of the cuprous chloride is recovered from the aqueous phase. In a preferred aspect, reaction control diluent, e.g. diphenylether, also is recovered, from the tar phase, by extracting that phase with a hydrocarbon solvent, followed by separating the solvent, containing any dissolved control diluent, from the tar phase, and recovering the diluent.

T903,003

CONTINUOUS HYDROGENATION PROCESS

Barry M. Mitchell, Rte. 12, Westbrook Drive, Kingsport, Tenn. 37663

Filed Feb. 11, 1971, Ser. No. 114,730

Int. Cl. C07c *85/12*
U.S. Cl. 260—583 K

No Drawing. 3 Pages Specification

Both an improved process for the production of primary amines and a method of separating the hydrogenation catalyst from the reaction products are disclosed. By the process, an unsaturated nitrile and liquid ammonia are reacted in the presence of an excess of a polar solvent such as isopropanol to give a cyanoethylated product. The cyanoethylated product is then fed to a continuous hydrogenation process which utilizes a stirred reactor for the hydrogenation of the dinitriles. The hydrogenation catalyst employed in the process is formed from a material that is magnetically attracted by a magnet field and is separated from the hydrogenation reaction mixture by magnetic means.

T903,004

FLASH COOLING PROCESS

Robert C. Rose, 13 Ervilla Drive, Larchmont, N.Y. 10538

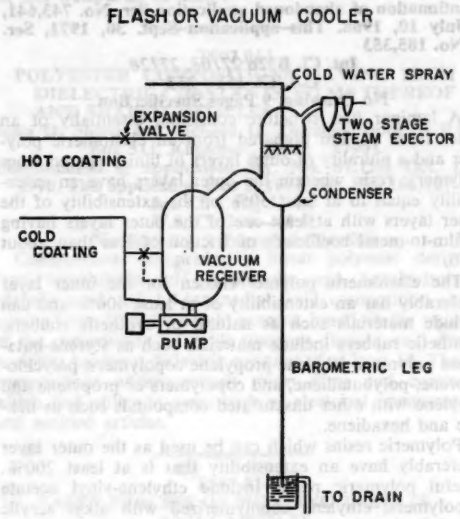
Filed May 14, 1971, Ser. No. 143,465

Int. Cl. F25b *19/00*
U.S. Cl. 62—100

1 Sheet Drawing. 9 Pages Specification

Method and apparatus for cooling coating and coating

components by flash evaporation. Cooling coating components results in improved control over coating viscos-

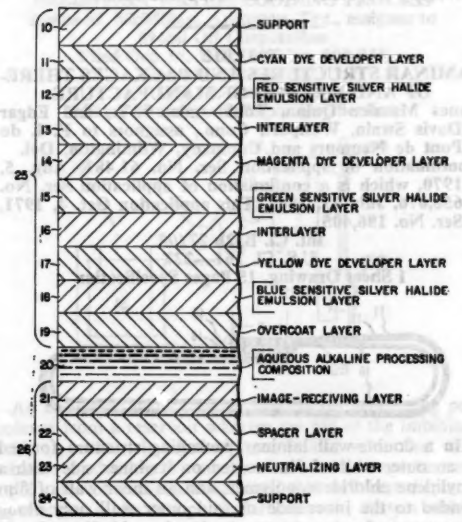


ity, water retention and adhesive retention, factors which effect coating weight and quality.

T903,005
TEXTURING THE SURFACE OF A PHOTOGRAPHIC DIFFUSION TRANSFER PRINT

Paul A. Camello, Randolph, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed July 2, 1971, Ser. No. 159,253
Int. Cl. B44c *1/16*
U.S. Cl. 96—27
1 Sheet Drawing. 14 Pages Specification

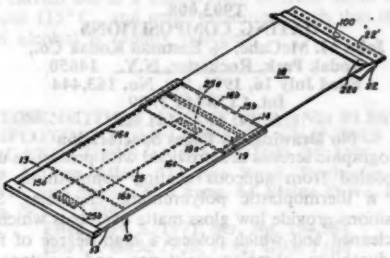


Distinctive photographic products are obtained by separating the support member from a diffusion transfer image bearing element. The residual portion of the diffusion transfer element, e.g., that portion bearing the image pattern can then be applied to a substrate having a surface which can provide a predesired antique or textural effect for the image pattern carrying member. Photographic products produced in accordance with the present invention closely resemble painted miniature portraits or similar specialized photographic products of this type.

T903,006
PHOTOGRAPHIC FILM UNIT

David A. Frost, 1669 Lake Ave., Rochester, N.Y. 14650

Filed July 6, 1971, Ser. No. 159,963
Int. Cl. G03b *17/50*
U.S. Cl. 95—13
2 Sheets Drawing. 18 Pages Specification



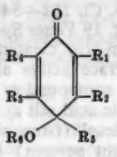
In a photographic film unit of the in-camera processing type comprising a sheet of photosensitive film and a sheet of image-receiving material adapted to be processed by spreading a processing solution between the two contained within an opaque envelope open at one end to allow the envelope and said sheet of image-receiving material to be slid off the film for exposure of the film and returned to covering relation with the film for processing, the improvement which comprises incorporating within the film unit itself a flexible limit strap for positively limiting the amount the envelope can be withdrawn from the film for exposure of the film. This limit strap has one of its ends attached to the back side of the film and its other end attached to the inside of one wall of the envelope. As the envelope is slid off the film this limit strap is unfolded and stops withdrawal of the envelope from the film when it becomes fully extended.

T903,007
PREPARATION OF SUBSTITUTED CYCLOHEXADIENONES

Hans K. Dietl and Howard S. Young, both of P.O. Box 511, Kingsport, Tenn. 37901

Filed July 9, 1971, Ser. No. 161,355
Int. Cl. C07c *49/64*
U.S. Cl. 260—396 N
No Drawing. 9 Pages Specification

Substituted cyclohexadienones having the structural formula



wherein R_1, R_2, R_3 and R_4 are the same or different and each of R_1, R_2, R_3 and R_4 may be hydrogen, alkyl, aryl,

halogen, or alkoxy; R_5 is alkyl, aryl, or halogen, and R_6 is alkyl, are prepared by reacting a para-substituted phenol having at least one substitution in the ortho position, with manganese dioxide in an aqueous sulfuric acid-straight or branched chain alcohol solution or reaction medium. The substituent occupying the para-position on the para-substituted phenol starting material must not be hydrogen. Among typical suitable, readily available and relatively inexpensive alcohols which may be employed as the alcohol component of the acid-alcohol reaction medium may be mentioned straight or branched chain alcohols such as methanol, ethanol, n-propanol, isopropanol, n-butanol, tertiary-butanol, pentanols, and the like. The cyclohexadienones prepared in accordance with the invention may be readily converted by known reactions into a number of valuable food antioxidants and related products.

T903,008
COATING COMPOSITIONS
John M. McCabe, % Eastman Kodak Co., Kodak Park, Rochester, N.Y. 14650
Filed July 16, 1971, Ser. No. 163,444
Int. Cl. B44d *1/09*
U.S. Cl. 117—161 KP
No Drawing. 12 Pages Specification

Radiographic screens are provided with protective overcoats coated from aqueous coating compositions containing a thermoplastic polyurethane elastomer. Such compositions provide low gloss matte overcoats which are easily cleaned and which possess a high degree of flexibility, durability, abrasion resistance, and resistance to radiation degradation. Particularly good properties are provided by admixing polymethyl methacrylate resin and a polymer of ethyl acrylate, acrylic acid and acrylonitrile with the polyurethane elastomer. In such compositions, the polyurethane elastomer is preferably employed in an amount of about 5 to 10 percent by weight, based on the total weight of resins in the composition. The protective overcoats are particularly useful in screens comprising heavy metal host matrix phosphors such as barium lead sulfate or europium-activated barium strontium sulfate.

T903,009
PHOSPHORUS-FREE CLEANING FORMULATIONS
Richard D. Katstra, Englewood Cliffs, N.J., assignor to Continental Oil Company, Ponca City, Okla.
Filed Sept. 22, 1971, Ser. No. 182,863
Int. Cl. C11d *1/12*
U.S. Cl. 252—559
No Drawing. 17 Pages Specification

Phosphorus-free cleaning formulations containing only surface active materials. The surface active materials used include a major proportion of a nonionic surfactant and a lesser amount of an alkyl aryl sulfonate salt.

T903,010
PHOSPHORUS-FREE CLEANING FORMULATIONS
Richard D. Katstra, Englewood Cliffs, N.J., assignor to Continental Oil Company, Ponca City, Okla.
Filed Sept. 22, 1971, Ser. No. 182,883
Int. Cl. C11d *1/18*
U.S. Cl. 252—546
No Drawing. 19 Pages Specification

A liquid, phosphorus-free cleaning formulation comprising a nonionic surface active agent in combination with an alkali cleaning compound or in combination with an amino polycarboxylic acid salt as a sequestering agent. Alternatively, a high level (from about 40 weight percent to about 70 weight percent) of the nonionic surfactant in an aqueous alcohol diluent may be employed without the inclusion of detergency builder compounds, sequestering agents or hydrotropes.

T903,011
LAMINAR ELASTOMERIC FILM STRUCTURES
Max Goldman, Wililamsville, N.Y., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Continuation of abandoned application Ser. No. 743,641, July 10, 1968. This application Sept. 30, 1971, Ser. No. 185,353
Int. Cl. B32b *27/08, 27/28*
U.S. Cl. 161—253
No Drawing. 9 Pages Specification

A laminar film structure consisting essentially of an inner layer of film prepared from an elastomeric polymer and a plurality of outer layers of film prepared from polymeric resin wherein the outer layers have an extensibility equal to at least 50% of the extensibility of the inner layers with at least one of the outer layers having a film-to-metal coefficient of friction of less than about 0.50.

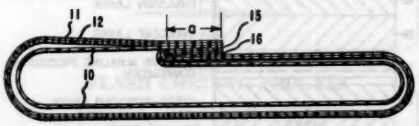
The elastomeric polymer chosen for the inner layer preferably has an extensibility of at least 400% and can include materials such as natural or synthetic rubbers, Synthetic rubbers include materials such as styrene-butadiene polymers, ethylene-propylene copolymers, polychloroprene, polybutadiene, and copolymers of propylene and ethylene with other unsaturated compounds such as hexene and hexadiene.

Polymeric resins which can be used as the outer layer preferably have an extensibility that is at least 200%. Useful polymeric resins include ethylene-vinyl acetate copolymers, ethylene copolymerized with alkyl acrylic esters having 1–5 carbon atoms in the alkyl group, and ethylene and propylene copolymers. Especially preferred are ethylene copolymers wherein the comonomer comprises from about 25 to 35% of the polymeric composition.

One combination of elastomeric polymer and polymeric resin which has been found to be particularly satisfactory comprises an inner layer of styrene-butadiene elastomer laminated on two sides with an outer layer of ethylene-vinyl acetate copolymer.

The laminar film structures of the present invention can be prepared by conventional means such as coextrusion, adhesive lamination, or melt coating. These laminated structures have a reduced tendency to delaminate upon stretching making them particularly suitable for packaging foodstuffs such as bread and meat.

T903,012
LAMINAR STRUCTURES AND PACKAGES THEREOF AND METHOD OF MANUFACTURE
James Maurice Quinn, Tonawanda, N.Y., and Edgar Davis Swain, Westport, Conn., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.
Continuation of application Ser. No. 61,481, Aug. 5, 1970, which is a continuation of application Ser. No. 655,076, July 21, 1967. This application Oct. 4, 1971, Ser. No. 186,405
Int. Cl. B32b *27/08*
U.S. Cl. 161—227
1 Sheet Drawing. 15 Pages Specification



In a double-wall laminar packaging structure formed of an outer wall of film coated on its inner side with a vinylidene chloride copolymer, and an inner wall of film bonded to the inner side of said outer wall only along edge areas; the improvement wherein said film of said outer wall is an organo thermoplastic polymer film, such as polyethylene terphthalate, polypropylene or nylon, and the film of said inner wall is a polyolefin film, such as

polyethylene or an ionic hydrocarbon copolymer, and wherein said edge areas comprise polyolefin film directly bonded to vinylidene chloride copolymer-coated surfaces of said outer wall of film.

T903,013
POLYESTER COMPOSITIONS HAVING HIGH DIELECTRIC CONSTANTS, FILMS THEREOF AND SHAPED ARTICLES

John O. Sharp and Richard G. Devaney, both of P.O. Box 511, Kingsport, Tenn. 37901

Continuation of application Ser. No. 81,126, Oct. 15, 1970. This application Oct. 5, 1971, Ser. No. 186,817
Int. Cl. C08g *51/04*
U.S. Cl. 260—40 R
No Drawing. 9 Pages Specification

Compositions comprising a linear polyester derived from terephthalic acid, isophthalic acid, hexahydroisophthalic acid and 1,4-butanediol, said composition containing from 70 to 90 weight percent, based on the weight of the composition, of rutile titanium dioxide, said compositions having a dielectric constant of at least 50. These compositions advantageously form films and coatings which find utility in areas such as electrical components and molded articles.

T903,014
LASER PROCESS OF PRINTING TABLETS AND CAPSULES

Robert E. Dempski, 1629 Arran Way, Dresher, Pa. 19025

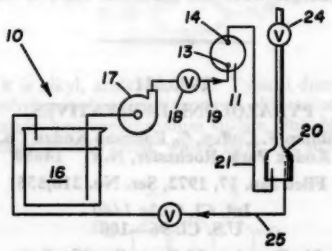
Filed Oct. 7, 1971, Ser. No. 187,576
Int. Cl. B23k *27/00*
U.S. Cl. 219—121 LM
No Drawing. 3 Pages Specification

A laser is used for printing indicia on solid pharmaceutical dosage forms. The process involves scanning a laser beam, which is focussed and modulated to produce a desired image, over tablets or capsules in order to write or print a coding word or symbol. The laser energy acting on the surface of the tablet or capsule forms the desired image.

T903,015
IMBIBITION WATERFLOODING PROCESS

James M. McMillen, Arlington, Tex., assignor to Mobil Oil Corporation

Filed Oct. 18, 1971, Ser. No. 190,011
Int. Cl. E21b *43/22*
U.S. Cl. 166—252
1 Sheet Drawing. 12 Pages Specification



An imbitition waterflooding process for recovering petroleum from a reservoir wherein the pH of the imbibing fluid, e.g., water, is adjusted to a desired value that will enhance production. By means of controlled experiments, a pH value of water is determined that will best displace a particular oil from a particular reservoir. Waters which are available for waterflooding said reservoir are tested and the pH value of the most suitable is adjusted and buffered to the desired pH value. This water is then injected into the reservoir.

T903,016
PROCESS FOR PREPARING HIGHER TRIORGANO PHOSPHATE ESTERS

James Perry Cleveland, Rte. 8, Cochise Trail, Kingsport, Tenn. 37664

Filed Oct. 29, 1971, Ser. No. 193,999
Int. Cl. C07f *9/08*
U.S. Cl. 260—982
No Drawing. 8 Pages Specification

The present invention concerns a process for substituting at least one higher organo group such as butyl, for a lower alkyl group of a trialkyl phosphate such as triethyl phosphate, wherein each original alkyl group of the phosphate contains from 1 to 10 carbons, comprising reacting the trialkyl phosphate with an alcohol or substituted alcohol in the presence of from about 2 to about 40 mole percent based on moles of phosphate triester of the alkoxide of the alcohol which is higher in carbons than at least one alkyl group of the phosphate, the reaction being carried out at a temperature of from about 25° C. to about 115° C., and under conditions such that the liberated alcohol is rapidly removed.

T903,017
PHOTOSENSITIVE COMPOSITION AND ELEMENT EMPLOYING COMPLEXES OF CYANIDES AND ORGANOAZIDES AND METHOD OF USE

James A. Van Allan, 314 Rye Road, Rochester, N.Y. 14615, and Shirley C. Chang, 64 Elaine Drive, Henrietta, N.Y. 14467

Filed Nov. 1, 1971, Ser. No. 194,551
Int. Cl. G03c *1/52, 1/92*; G03f *7/08*
U.S. Cl. 96—33
No Drawing. 22 Pages Specification

Photographic compositions including a radiation-sensitive complex of a cyanide of an alkali metal or a triorganophosphonium group with an organoazide such as an arylazide are radiation-sensitive and can be imagewise exposed to activating rays to yield a species that can react with a dye-forming coupler to form an image dye, e.g. an azo dye. Optionally, such compositions can include a polyhalogen sensitizer, a water-permeable polymeric binder and/or a dye-forming coupler. When these compositions are present on a support, photographic elements are formed. Imagewise exposure of the compositions or element to activating rays for the complex in the presence of a dye-forming coupler produces a photographic image in exposed regions. Also, if an element or composition not exposed in the presence of a coupler is subsequently treated with a dye-forming coupler, a photographic image forms in exposed regions. After production of the image, it can be stabilized by a water wash. If desired, the photographic image can be intensified by heating. Lithographic printing surfaces can be prepared when an element including a lithographic plate support has thereon a composition of the present type that is ink receptive or can be made so by exposure to activating rays. The lithographic surface is formed after exposure and subsequent washing away of exposed or unexposed regions.

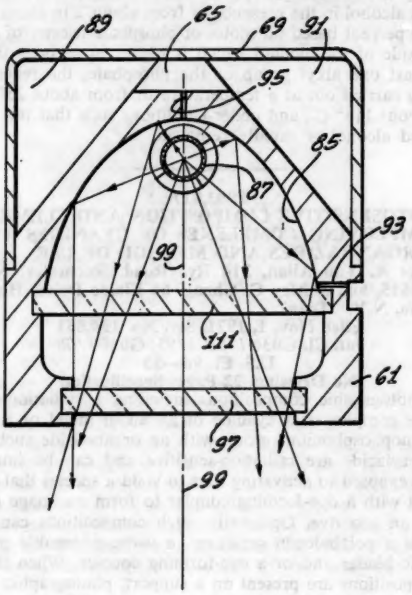
T903,018
OPTICAL SYSTEM FOR A PHOTOSENSITIVE MATERIAL PRINTER

John L. Dexter, Santa Barbara, Calif., assignor to Gyrex Corporation, Santa Barbara, Calif.

Continuation of abandoned application Ser. No. 877,160, Nov. 17, 1969. This application Dec. 8, 1971, Ser. No. 206,212
Int. Cl. G03b *27/10, 27/16*
U.S. Cl. 355—84
4 Sheets Drawing. 21 Pages Specification

An optical system for exposure of either or both sides of a workpiece which is sensitive to light rays. The described embodiment comprises a pair of collimated mercury vapor tubular lamps positioned close to the work-

piece and mounted in opposed semi-elliptical reflectors. An infrared ray filter (111) is mounted adjacent the mouth of each reflector, intermediate the lamp and a fiber optic plate (97). The fiber optic plates segregate the light rays emanating from the lamps so that only those rays which are within a predetermined range of angles relative to a perpendicular plane reach the workpiece. The filters absorb nearly all of the infrared rays emitted toward the optic plates, thereby protecting the plates and the workpiece from heat generated by the lamps. Each lamp is fixed within its reflector by means of insulators



mounted within housing end caps which are formed with airflow passages for cooling the lamp, the infrared ray filter, and the reflector. An insulator for holding the ends of the tubular lamp comprises a body having flexible mmebers on one end thereof which fit into a bore and form a seat for the end of a lamp. An axial passage through the body provides a passage for the electrical wire leading to the end of the lamp and a pair of shoulders are formed on the body for axially positioning the insulator in the bore and for manually gripping the insulator during installation and removal.

T903,019

FIRE-RETARDANT POLYESTER COMPOSITIONS

Samuel M. Draganov, Tustin, Calif., assignor to United States Borax & Chemical Corporation, Los Angeles, Calif.

Continuation of application Ser. No. 60,763, Aug. 3, 1970. This application Jan. 3, 1972, Ser. No. 215,228

Int. Cl. C08g *51/04*; C09d *5/18*
U.S. Cl. 260—40 R

No Drawing. 11 Pages Specification

Fire-retardant halogenated polyester compositions containing a synergistic mixture of zinc borate and hydrated alumina. Brominated polyesters containing about 5 to 30% by weight of the synergistic additive combination are preferred.

T903,020

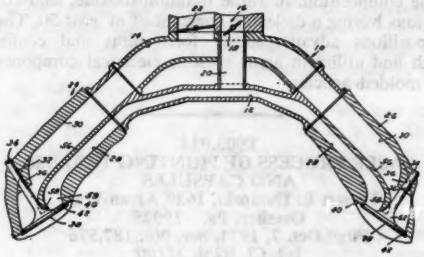
INTERNAL COMBUSTION ENGINE DUAL INDUCTION SYSTEM

Robert R. Cook, Dearborn, and Richard P. Krygowski, Livonia, Mich., assignors to Ford Motor Company, Dearborn, Mich.

Continuation of abandoned application Ser. No. 50,645, June 29, 1970. This application Jan. 7, 1972, Ser. No. 216,231

Int. Cl. F01l *3/00*; F02n *13/04*
U.S. Cl. 128—188 M

2 Sheets Drawing. 15 Pages Specification



An internal combustion engine having a cylinder head positioned over the end of a combustion chamber with the cylinder head having primary and secondary induction passages positioned therein. An induction valve including a valve stem and a valve head is reciprocably mounted within the cylinder head, and a common wall of the primary and secondary induction passages terminates at the head of said valve in a web extending across the head. When the induction valve is in the closed position, the edge of this web is spaced from the valve head at a distance sufficiently small that the deposits on the valve head form a positive seal between the valve head and the edge of the web after the internal combustion engine has been operated for a short period of time. This structure provides a seal between the primary and secondary induction passages when the induction valve is closed.

T903,021

PYRAZOLONE DERIVATIVES

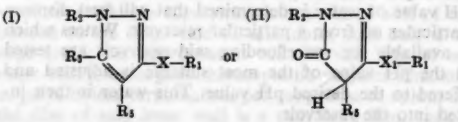
William F. Coffey, % Eastman Kodak Co., Kodak Park, Rochester, N.Y. 14650

Filed Jan. 17, 1972, Ser. No. 218,555

Int. Cl. G03c *1/40*
U.S. Cl. 96—100

No Drawing. 13 Pages Specification

Azomethine magenta dye-forming color photographic couplers of the formulae



wherein

X is —S—, —Se—,

or —SO_2—;

X_1 is —Se—,

or —SO_2—;

R_1 and R_2 are branched or unbranched alkyl groups having 1–20 carbon atoms, or an aryl group such as a phenyl or a naphthyl radical or a heterocyclic radical;

R_3 is defined as an acyloxy radical such as R_4—CO—O in which R_4 is an alkyl group of 1–20 carbon atoms or an aryl group; and

R_5 is defined as a hydrogen atom, or a coupling off group such as a halo, an aryloxy, an arylthio, an alkylthio, an alkoxy, an acyloxy, a thiocyano, or a heterocyclic radical attached to the pyrazolone ring by an —O— or —S— group;

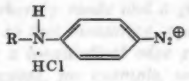
also included within the invention is an alkaline color developing solution containing a diffusible coupler compound of the above-defined class; a color photographic silver halide emulsion containing nondiffusible coupler compounds as above-defined; color photographic elements including diffusion transfer-type elements and having one or more of the defined couplers contained therein; and a process for forming azomethine dyes by reacting couplers of the above class with oxidized color developing agent.

T903,022
PHOTOSENSITIVE DIAZONIUM SALTS OF XANTHENE DYES

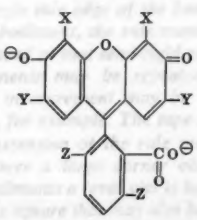
Douglas G. Borden, % Kodak Park Research Laboratories, Rochester, N.Y. 14650

Filed Feb. 1, 1972, Ser. No. 222,649
Int. Cl. G03c 1/52
U.S. Cl. 96—91 R
No Drawing. 9 Pages Specification

Diazonium salts are spectrally sensitized by forming a diazonium xanthene dye complex by reacting an aqueous solution of a diazonium cation, which contains an imino group para to the diazonium group, with an aqueous solution of a xanthene dye anion and collecting the precipitate. Suitable diazonium cations include those which have the structure



where R is alkyl, aralkyl, or aryl. Typical diazonium salts are 4-ethylaminobenzenediazonium chlorozincate and 4-phenylaminobenzenediazonium sulfate. Suitable xanthene dye anions include those which have the structure



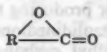
where X, Y and Z are each independently hydrogen or halogen. Typical xanthene dyes are fluorescein, eosin, rose bengal and erythrosin. The photodecomposition products of the complexes are ink accepting and can be used as is, or optionally with a binder, in the preparation of planographic printing plates.

T903,023
PRINTING INK CONTAINING A LACTONE SOLVENT

Clarence S. Hunter, 1669 Lake Ave., Rochester, N.Y. 14615

Continuation of abandoned application Ser. No. 861,170, Sept. 25, 1969. This application Feb. 17, 1972, Ser. No. 227,255
Int. Cl. C09d 11/08, 11/10
U.S. Cl. 106—22
No Drawing. 8 Pages Specification

A printing ink characterized by its rapid absorption by polymeric materials, and especially suited for printing on photographic film such as cellulose ester base film and on photographic paper having a polyolefin coating thereon. This printing ink comprises: (1) a colorant such as a dye and/or a pigment in an amount between 1 and 50% by weight; (2) a film-forming resinous binder such as a vinyl resin (e.g. polyvinyl acetate), a polycarbonate resin, a polyolefin resin or a cellulose ester (e.g. cellulose acetate, propionate, butyrate, nitrate, or acetate butyrate) in an amount between 1 and 20% by weight sufficient to dissolve said binder and render the ink spreadable; and (3) a solvent comprising 5–100% of a lactone of the formula:



wherein R is an alkylene radical of 2–6 carbon atoms. Examples of suitable lactones are beta-propiolactone, 4-butyrolactone, 4-valerolactone, 6-hexanolactone and the like. The lactone may be employed as the sole solvent or it can be mixed in an amount of 5% or more with one or more conventional solvents such as methanol, ethanol, isopropanol, butanol, or pentanol; esters, such as ethyl acetate, butyl acetate, ethyl propionate; ethers, such as ethyl ether, propyl ether, butyl ether; and ketones such as acetone, methyl ethy ketone, 4-methyl-2-pentanone. The ink is exceptionally suitable for flexographic or rotatogravure pirnting, but it also can be used in ink stamp pads or in felt-tipped marking pens.

T903,024
LIGHT-SENSITIVE POLYMERS CONTAINING THALLATED ARYL GROUPS

George A. Reynolds and Douglas G. Borden, both % Eastman Kodak Co., Kodak Park, Rochester, N.Y. 14650

Filed Feb. 18, 1972, Ser. No. 227,643
Int. Cl. G03c 1/68
U.S. Cl. 96—115 R
No Drawing. 9 Pages Specification

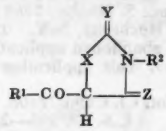
Light-sensitive polymers containing thallated aryl groups are prepared by reacting a preformed polymer containing aryl groups with a thallating agent. Suitable preformed polymers can have the aryl groups pendant from or as an integral part of the polymer backbone and include nonlight-sensitive polymers such as polystyrenes and polyphenyl ether and light-sensitive polymers such as poly(vinyl cinnamate) and poly(vinylnaphthophenone). Suitable thallating agents include thallium trifluoroacetate. Polymers of this invention are positive-working, i.e. on exposure to actinic radiation they become more soluble in typical developer solvent, and can be used in compositions and elements to prepare photomechanical images such as photoresists and planographic printing plates.

T903,025
NOVEL PHOTOGRAPHIC COUPLERS

Delwyn E. Machiele, % Eastman Kodak Co., Kodak Park, Rochester, N.Y. 14650

Filed Feb. 18, 1972, Ser. No. 227,668
Int. Cl. G03c *1/40, 5/54, 7/32*
U.S. Cl. 96—100
No Drawing. 28 Pages Specification

A class of 5-acyl-2,4-oxazolidinediones of the general formula



in which

X, Y and Z are each defined as oxygen or sulfur;

R^1 represents an aryl, an alkyl, a heterocyclic group, —NHR and —OR group in which R is defined as hydrogen, an aryl, an alkyl, or a heterocyclic radical;

R^2 is a hydrogen, an aryl group, an alkyl group, or a heterocyclic group;

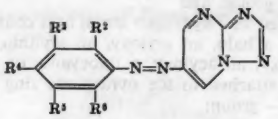
said class of compounds having the ability to react with oxidized color developer to obtain photographically useful yellow dyes; the non-diffusible compounds of this invention being preferably utilized in a color photographic element as part of one or more light-sensitive silver halide emulsion layers and the diffusible compounds utilized by incorporation into a developer composition; also included is a process for producing the indicated compounds by reacting a 2,4 oxazolidinedione or thio analog thereof with magnesium methyl carbonate, and, thereafter, reacting the resulting chelate salt with an acylating agent or subjecting it to alcoholysis.

T903,026
DIRECT-POSITIVE SILVER HALIDE EMULSIONS CONTAINING SUBSTITUTED PHENYLAZO-1,2,3-ALPHA, 7-TETRAZAINDENE COMPOUNDS

Cynthia Geer Ulbing, Fairport, and Dorothy Johnson Beavers, Rochester, N.Y. (both % Eastman Kodak Co., Kodak Park Division, Rochester, N.Y. 14650)

Filed Mar. 10, 1972, Ser. No. 233,758
Int. Cl. G03c *1/28*
U.S. Cl. 96—107
No Drawing. 12 Pages Specification

Direct-positive silver halide emulsions and photographic elements containing said emulsions are disclosed wherein the emulsion contains a substituted phenylazotetrazaindene compound. In one aspect, the tetrazaindene compounds which are used in direct-positive emulsions have the formula:



wherein R^2, R^3, R^4, R^5 and R^6 can each be hydrogen atoms, alkyl groups, nitro groups, halogen atoms, alkyloxy groups or alkylthio groups. The phenylazotetrazaindene compounds can be incorporated in fogged, silver halide emulsions such as, for example, emulsions disclosed in U.S. Pats. 3,367,778 by Berriman, 3,501,307 by Illingsworth, and the like. In one aspect, good image properties are obtained upon exposure and development of direct-positive emulsions containing the phenylazotetrazaindene compounds at concentrations of from 10 mg. to 2 g. per mole of silver.

REISSUES

OCTOBER 3, 1972

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

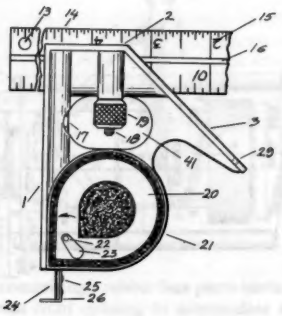
27,496
DUAL SQUARE

Peter Andrews, 190 Gebhardt Road, Penfield, N.Y. 14526

Original No. 3,364,581, dated Jan. 23, 1968, Ser. No. 167,609, Jan. 24, 1962, which is a continuation-in-part of Ser. No. 786,069, Jan. 12, 1959, which is a continuation-in-part of Ser. No. 611,926, Sept. 25, 1956. Application for reissue Jan. 19, 1970, Ser. No. 8,131

Int. Cl. G01b *3/10*

U.S. Cl. 33—189 15 Claims



A combination square having, in one embodiment, a graduated grooved rule member releasably secured to the head of the square by a clamping stud member while having a resilient graduated tape measure of the concavo-convex, in cross section when free, type housed in a lower portion of the square head. The square head having a side edge which extends perpendicular to a longitudinal edge portion of the rule member. When the tape measure is extended, for example, 2 or 3 feet from the head, it inherently forms a rod-like state so that an extension of the side edge is thereby made and a generally semi-rigid gauge is formed so that measuring, squaring and scribing operations along a longitudinal edge portion of the rule member are executed, for example, on the surface of a board, and in one operation. In another embodiment the rule member is removed from the head so that another semi-rigid gauge effect is produced, by use of the tape measure in an extended rod-like state, for readily making surface gauge measurements at an oblique angle, by use of an oblique angle side edge of the head, accordingly. In still another embodiment, the rule member either is or is not used in the head so that semi-rigid gauge, for example, inside measurements may be repeatedly made so that transfer of the measurement may be made to the surface of a board, for example. The tape measure may also be used as an extension of the rule member for making measurements over a large corner obstruction. And in still other embodiments a level vial is housed substantially in the head of the square that may also have a tape measure cam lock for locking the tape measure in an extended position and even while the level vial is being used, accordingly.

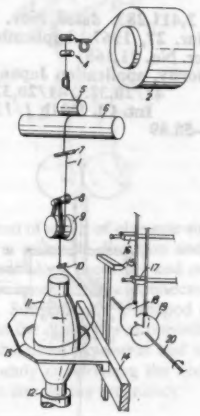
27,497
METHOD AND APPARATUS FOR WINDING YARN

Bryan Kingsley Johnson, Abergavenny, and Frederick Arthur Smith, Newport, England, assignors to British Nylon Spinners Limited, Pontypool, Monmouthshire, England

Original No. 3,488,938, dated Jan. 13, 1970, Ser. No. 442,858, Apr. 5, 1965. Application for reissue Apr. 22, 1970, Ser. No. 30,727

Int. Cl. D01h *13/00;* D02g *3/02*

U.S. Cl. 57—98 19 Claims



An apparatus and process for the preparation of cylindrically-wound yarn packages characterized by a relatively high helix angle and reduced ridging, the process including programming means arranged to control the winding conditions by varying winding speeds in a manner such as to reduced ridging.

27,498
SINGLE FLIGHT AUGERS

John V. Watson, Fort Worth, Tex., assignor to Watson Manufacturing Company, Fort Worth, Tex.

Original No. 3,387,674, dated June 11, 1968, Ser. No. 591,608, Nov. 2, 1966. Application for reissue May 21, 1970, Ser. No. 39,486

Int. Cl. E21c *13/04*

U.S. Cl. 175—394 10 Claims

1. An auger type cutting apparatus comprising: a central shaft; a single edge cutter extending substantially

radially from an inner region of the normally lower end of said shaft; a single flight spiral conveyor secured to said shaft to extend from said cutter toward the normally upper end of said shaft; a skirt having the form of a truncated cylinder segment depending from said single flight spiral conveyor along its outermost edge and terminating in a lower edge having a substantially horizontal region spaced a selected distance above said cutter to define the maximum advance angle of the apparatus and an oblique region which extends upward along the periphery of said spiral conveyor; and a substantially vertical ear extending upward from the outermost edge of said cutter to clean the wall of the bore hole as formed.

27,499

SPINNING APPARATUS UTILIZING AIRSTREAM

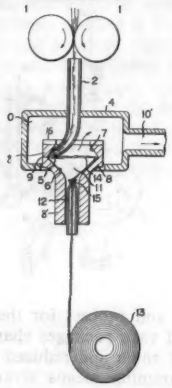
Kiyosige Isomura, Kariya, Japan, assignor to Toyoda Automatic Loom Works, Ltd., Kariya, Aichi Prefecture, Japan

Original No. 3,411,283, dated Nov. 19, 1968, Ser. No. 626,224, Mar. 27, 1967. Application for reissue Nov. 19, 1970, Ser. No. 91,168

Claims priority, application Japan, Mar. 31, 1966, 41/20,325, 41/20,326

Int. Cl. D01h *1/12*

U.S. Cl. 57—58.89 **8 Claims**



Apparatus for continuous spinning utilizing an airstream issuing into a spinning chamber. Said spinning chamber having oppositely formed inclined walls which form a V and said apparatus having a guide tube for depositing opened sliver-like fiber in said V-shaped area. The spinning chamber having vanes at the top thereof to facilitate discharge of air toward a suction box connected to a source of negative pressure.

27,500

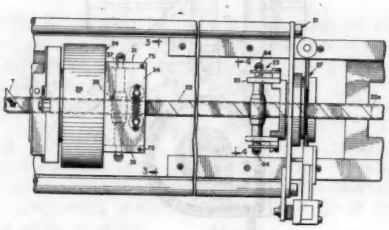
STRIPPER FOR INTERMITTENT SPIRAL TUBE WINDER

Anthony V. Thomas, Prospect Heights, Ill., assignor to Precision Paper Tube Company, Wheeling, Ill.

Original No. 3,482,490, dated Dec. 9, 1969, Ser. No. 712,291, Mar. 11, 1968. Application for reissue Oct. 9, 1970, Ser. No. 79,715

Int. Cl. B31c *3/00*

U.S. Cl. 93—80 **5 Claims**



An improved stripper for an intermittent spiral tube winder wherein an arbor advances while rotating to perform a winding operation and thereafter retracts from the already wound tube so as to present an overlapping portion suitable for severing—the severed tube being useful as a coil form. The improved stripper or gripper includes one-way roller clutches arranged to bear against the sides of a rectangular tube to restrict the same from returning with the arbor.

PATENTS

GRANTED OCTOBER 3, 1972

GENERAL AND MECHANICAL

3,694,814
DIVER'S MASK

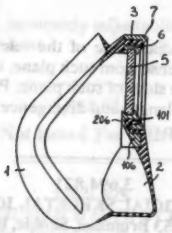
Ettore De Barbieri, Via Solimano, S. Margherita Ligure, and Umberto Boggian, Crosa Osten 5/B, 16030 Sori, both of Italy

Filed March 23, 1970, Ser. No. 21,847

Claims priority, application Italy, March 26, 1969, 6905 A/69; Sept. 12, 1969, 7312 A/69

Int. Cl. A64f *9/02*

U.S. Cl. 2—14 D **10 Claims**



A diver's mask comprising a rubber face piece having a nose piece and a rimmed front opening to accomodate a single-piece glass pane, a rigid frame member encircling said front opening and provided with means extending into a deep groove formed in the face piece above the nose root zone of the mask, so as to sustain the mask nose piece and to press the rim of the face piece against the edge of the glass pane, thus providing for a waterproof tight seal between said parts.

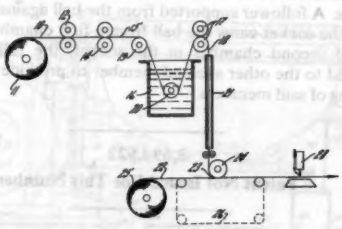
3,694,815
METHOD FOR APPLYING ELASTIC RIBBON TO FABRICS

William H. Burger, Neenah, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed Sept. 25, 1970, Ser. No. 75,495

Int. Cl. A41b *9/04*; **A41d** *1/00*

U.S. Cl. 2—224 A **2 Claims**



A method for attaching a garment gathering elastic ribbon comprising the steps of stretching the elastic ribbon, internally immobilizing the elastic ribbon in a stretched state, attaching the stretched elastic ribbon to the garment and causing the attached elastic ribbon to return to its original contracted state.

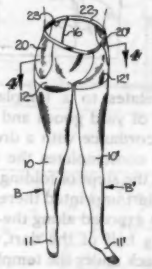
3,694,816
MATERNITY PANTY HOSE GARMENT AND METHOD

John R. Smith, Burlington, N.C., assignor to Alamance Industries, Inc., Burlington, N.C.

Filed Nov. 12, 1970, Ser. No. 88,655

Int. Cl. A41b *9/00*, *11/00*

U.S. Cl. 2—224 R **6 Claims**



This garment is formed of a pair of elongate stocking blanks which are each slit in a walewise direction and downwardly from the upper ends and along the inner and outer side portions. The edges of the inner slits are connected together to form the crotch area. Substantially U-shaped elastic gusset panels are connected in the outer slits at opposite sides of the garment to provide substantial expansion and support in the panty area without unduly constricting the abdomen of the wearer as it increases in size during pregnancy.

3,694,817
METHODS OF MANUFACTURING GARMENTS

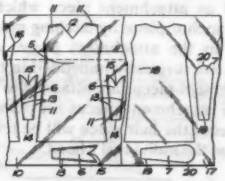
Philip Brown, Wembley, England, assignor to Mintray Limited, London, England

Filed Jan. 8, 1971, Ser. No. 104,950

Claims priority, application Great Britain, Jan. 3, 1970, 1,641/70

Int. Cl. A41d *27/00*

U.S. Cl. 2—243 R **7 Claims**

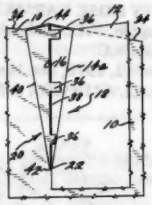


The invention provides a method of manufacturing garments or garment parts from a continuous web comprising feeding the web to an apparatus in which a tuck is formed in the web within the area from which the garment or garment part is to be formed, the tuck is secured at least one location within the area to hold the tuck in place, the web is severed around the outline of the required garment part and the tuck is opened away from the location where it is secured thereby forming a dart or pleat in the garment part.

3,694,818
METHOD AND APPARATUS FOR SEWING DARTS

Ruth N. Nielson, 665 Meadowbrook Dr., Boulder, Colo.

Filed June 11, 1971, Ser. No. 152,087
Int. Cl. A41d
U.S. Cl. 2—243 R 10 Claims

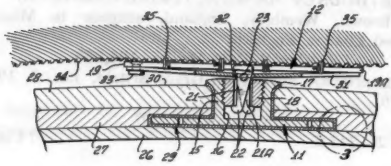


This invention relates to a template to be temporarily fastened to a piece of yard goods and used as a guide while sewing a dart in accordance with a dress pattern or the like. The invention also contemplates the method of sewing the dart which includes the steps of folding the pattern back along the bisector of the dart imprinted thereon, laying the template atop the goods thus exposed along the fold line of the pattern to form the missing half of the dart, removing the pattern, folding the goods back under the template so that the fold line coincides with the bisector of the dart, and stitching the double thickness of material together using the margin of the template remote from the fold line as a guide.

3,694,819
HAIR PIECE SECURING DEVICE

Gene P. Meyer, 16642 Wanderer Lane, Huntington Beach, Calif.

Filed Dec. 2, 1970, Ser. No. 94,275
Int. Cl. A61f 1/00; A41g 5/00
U.S. Cl. 3—1 11 Claims



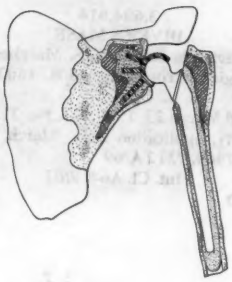
The hair piece attachment device of the present invention is comprised of an anchor piece which is surgically imbedded in the scalp and an attachment piece which is removably attached to the anchor piece by latching means. The hair piece is connected to the attachment piece. A plurality of the anchor pieces are surgically imbedded in the scalp and a plurality of attachment pieces are attached to the hair piece such that when the attachment pieces are removably attached to the anchor pieces the hair piece will be secured and cosmetically aligned on the individual's head.

3,694,820
PROSTHETIC SHOULDER JOINT

John Tracey Scales, Stanmore, and David Goddard, Kings Langley, both of England, assignors to National Research Development Corporation, London, England

Filed July 29, 1970, Ser. No. 59,083
Claims priority, application Great Britain, Aug. 25, 1969, 42,197/69
Int. Cl. A61f 1/24
U.S. Cl. 3—1 7 Claims

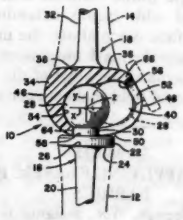
A prosthetic scapular device is provided having a generally cup-shaped member, normally of a hemispherical form at least internally, and intracancellous fixation means extending from approximately one half only of the outer surface of the cup. The fixation means, normally in the form of mutually divergent spikes, include long members extending from points adjacent the central radial plane of the relevant cup half and diverge in the same sense from such plane, together with short members on opposite sides of such plane. Preferably, the long members increase in length and divergence from said plane as they approach the cup rim.



3,694,821
ARTIFICIAL SKELETAL JOINT

Walter D. Moritz, 5253 Brummel, Skokie, Ill.

Filed Nov. 2, 1970, Ser. No. 85,971
Int. Cl. A61f 1/24
U.S. Cl. 3—1 17 Claims



A pair of skeletal members, such as a tibia and a femur, are connected together by a ball and socket type assembly comprising said artificial joint. The ball of the assembly is secured to one of said skeletal members which shifts relative the other skeletal member in an anterior-posterior direction as the ball rotates. A follower supported from the ball against the exterior of the socket cams the ball from a first chamber to a connected second chamber in the socket, the follower being secured to the other skeletal member to produce the relative shifting of said members.

3,694,822
Patent Not Issued For This Number

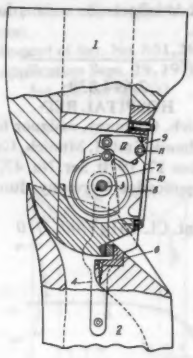
3,694,823
KNEE JOINTS FOR ARTIFICIAL LEGS

Denis Ronald William May, London, England, assignor to J. E. Hanger and Company Limited, London, England

Filed June 25, 1970, Ser. No. 49,858
Int. Cl. A61f 1/104
U.S. Cl. 3—27 1 Claim

The invention provides a prosthetic knee joint of the kind applying a lock against flexure when it is bearing a patient's

weight, in which a brake band is applied to a drum on the knee



joint spindle by an accurately adjustable lever carried by the thigh portion of the joint.

3,694,824

Patent Not Issued For This Number

3,694,825

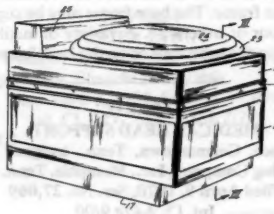
DISPOSAL OF HUMAN WASTE BY INCINERATION

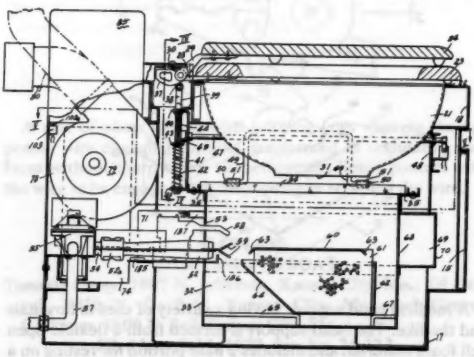
Frederick W. Kufrin, Janesville; Paul R. Virnoche, Newton; Donald J. Allen, Fort Atkinson; Phillip E. Gokey, Whitewater, and Frederick A. Rose, Fort Atkinson, all of Wis., assignors to Polar Ware Company, Sheboygan, Wis.

Filed March 17, 1970, Ser. No. 20,319

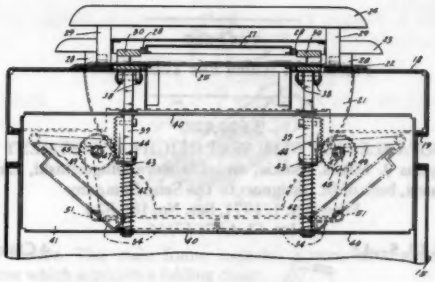
Int. Cl. A47k *11/02*

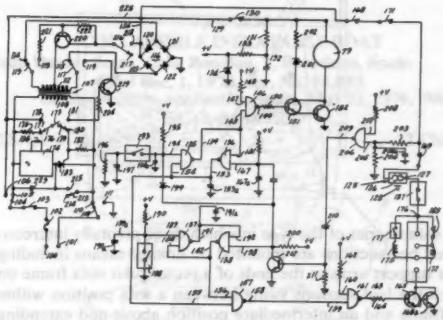
U.S. Cl. 4—131 **42 Claims**





Human waste is disposed of by incineration including burning solids, vaporizing liquids and converting any residual gases into elemental substantially odorless form. Discharge temperature of the treated gases is reduced to an acceptable level. Practice of the method is exemplified in an incineration toilet utilizing a "soft" gas flame providing not only incinerating and vaporizing heat within a firebox but also gas consuming heat in





a combustion passage leading from the firebox. Circulation of the products of combustion is promoted by an exhaust fan which draws them across a cooling air gap into a settling chamber before discharge from the apparatus. Various operating and safety structures and controls are provided.

3,694,826

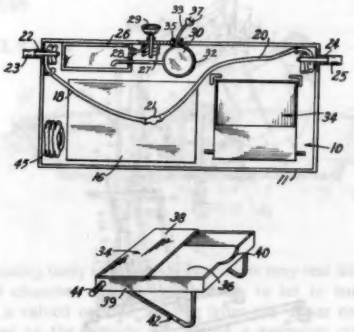
PORTABLE SHAMPOOING UNIT

Mary A. Pugh, Rt. 2, Box 273, Muskogee, Okla.

Filed Oct. 30, 1970, Ser. No. 85,604

Int. Cl. A47k *3/12*; A61h *35/00*

U.S. Cl. 4—159 **5 Claims**



A portable shampooing unit for washing the hair of bedridden patients wherein the shampooing unit is a substantially

self-contained unit requiring only the provision of common electrical house power while in use. The unit comprises a portable cart having a shampoo bowl in communication with a water source and a waste water container and a water heating unit for the water source. The entire unit is particularly designed and constructed to be rolled to the bedside and used for washing the patient's hair while the patient is in bed.

3,694,827

Patent Not Issued For This Number

3,694,828

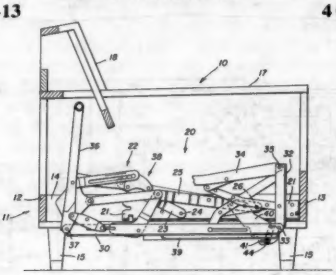
SOFA SLEEPER WITH SEAT HEIGHT ADJUSTMENT

Aloysius J. Mikos, Skokie, and Theodore Dlugostinski, Elmhurst, both of Ill., assignors to The Seng Company

Filed Oct. 1, 1971, Ser. No. 185,524

Int. Cl. A47c *17/14*

U.S. Cl. 5—13 **4 Claims**



A sofa sleeper of the type in which three pivotally interconnected bed sections are mounted on linkage means including front support arms at the ends of a rectangular sofa frame on which the bed sections swing between a sofa position within the frame and an intermediate position above and extending forwardly of the frame with one of the bed sections providing a seat deck in sofa position, a stabilizing cross bar on the front support arms which supports the forward end of the bed sections in sofa position, said cross bar being movable to adjust the pitch of the seat deck.

3,694,829

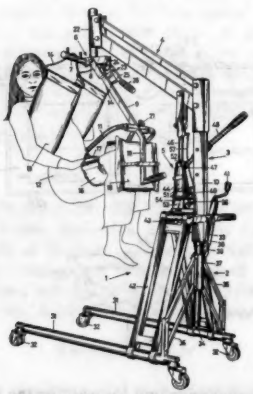
PATIENT LIFTING APPARATUS

Johannes Petrus Bakker, Van Galenlaan 28, Doorn, Netherlands

Filed March 18, 1970, Ser. No. 20,742

Int. Cl. A61g *7/08*

U.S. Cl. 5—81 **15 Claims**



A patient lifting apparatus comprising a mobile undercarriage whose track is adjustable, which undercarriage carries a vertical column to which a lifting apparatus comprising a system of parallel rods is attached, on the free end of which system of parallel rods suspension means for supporting the patient are provided.

3,694,830

HOSPITAL BED

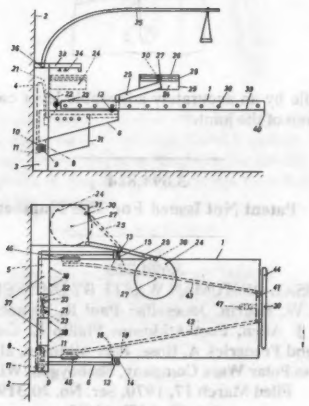
Johann Koller, Munich, Germany, assignor to M M M Muncher Medizin Mechanik GmbH, Munich, Germany

Filed June 17, 1970, Ser. No. 47,104

Claims priority, application Germany, June 18, 1969, P 19 30 789.2

Int. Cl. A61g *7/00, 7/10*

U.S. Cl. 5—63 **10 Claims**



Hospital bed arranged for independent vertical or tilting adjustment. The bed frame is supported for tilting adjustment on a subframe which latter is movable for vertical adjustment bodily on a base frame. The base frame may be supported on a wall, on the floor or otherwise. A variety of auxiliary devices are supported on the subframe or on the base frame.

3,694,831

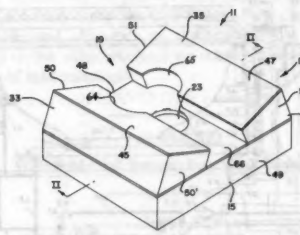
MEDICAL HEAD SUPPORT

Harry T. Treace, Germantown, Tenn., assignor to Richards Manufacturing Company, Inc., Memphis, Tenn.

Filed April 9, 1970, Ser. No. 27,069

Int. Cl. A47g *9/00*

U.S. Cl. 5—338 **11 Claims**



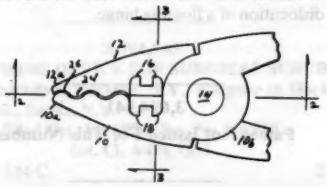
A medical head support having a variety of uses in hospitals and the like. The head support is formed from a flexible open cell foam material, and includes a base portion for resting on a supporting surface and a pair of pads fixedly mounted on the base portion. An upper minor portion of the pads and the base are provided with an open cell foam material which is soft and finer, i.e., has a greater number of cells per square inch, than the remainder of the material of the pads and base.

3,694,832
FITTED BED SHEET
Samuel J. Jamison, West Springfield, Mass., assignor to Johnson & Johnson
Continuation-in-part of Ser. No. 851,264, Aug., 1969, abandoned. This application Sept. 29, 1970, Ser. No. 76,879
Int. Cl. A47g *9/00*
U.S. Cl. 5—334 **9 Claims**

A fitted bed sheet prepared from a simple, substantially rectangular blank of textile material by inexpensive manufacturing techniques which provide fitted or mitered corners whereby the sheet clings to the mattress or pad upon which it is placed and resists movements to shift or dislodge it therefrom, and wherein there is substantially no excess textile material to form undesirable pockets, recesses, or folds.

3,694,833
Patent Not Issued For This Number

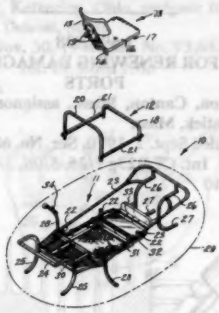
3,694,834
PLIER JAWS
Charles M. Daniels, Jr., Chagrin Falls, Ohio, assignor to Miller Corporation, Chagrin Falls, Ohio
Filed April 9, 1970, Ser. No. 27,036
Int. Cl. B21f *7/00;* **B25b** *7/22*
U.S. Cl. 7—5.5 **8 Claims**



A pair of pliers having wire gripping jaws wherein the opposing wire engaging surfaces are formed as undulating surfaces without sharp bends to increase the linear contact with the wire to be engaged without nicking or scraping the wire.

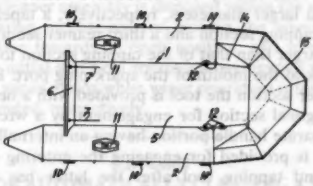
3,694,835
SPORTSMAN'S BOAT
Tommie Casey, 7907 N. Jefferson, Kansas City, Mo.; Ed Farrar, 5010 N. Garfield, Kansas City, Mo., and Grover Cockrum, 6500 N. Bell, Kansas City, Mo.
Filed March 31, 1970, Ser. No. 24,223
Int. Cl. B63b *7/08*
U.S. Cl. 9—2 A **7 Claims**

A boat which includes a tubular main frame with a transom board for mounting a motor in order to drive the boat. The main frame includes arcuate arm members which engage an inflatable O-shaped tube which imparts buoyancy to



the device. The main frame includes a removable smaller frame which supports a folding chair.

3,694,836
COLLAPSIBLE INFLATABLE BOAT
Juan Duarry Serra, Calle Rosellon, 1, Barcelona, Spain
Filed Dec. 1, 1970, Ser. No. 94,055
Claims priority, application Spain, May 22, 1970, 380,672
Int. Cl. B63b *7/08*
U.S. Cl. 9—2 A **12 Claims**



A collapsible inflatable boat has a substantially rigid buoyant bottom with inflatable float means fixedly attached thereto and can be collapsed to occupy substantially no more space than is occupied by the bottom alone while still retaining sufficient buoyancy to float in its collapsed condition. When inflated, the boat can be propelled by motor, sail or oars.

3,694,837
FLOATING BODY
Enar Sixten Von Norring, 770 20 Soderbarke, Sweden
Filed Aug. 25, 1970, Ser. No. 66,751
Claims priority, application Sweden, Aug. 25, 1969, 11727/69
Int. Cl. B63c *9/04*
U.S. Cl. 9—311 **5 Claims**

A floating body upon which swimmers may rest has an inner central chamber open at its bottom to let in surrounding water, a valved conduit leading from the upper end of said chamber to the outside for letting a swimmer control the amount of water and air in said chamber and thus the amount of submergence of the body and a bolt extending through the center of the bottom of the body to allow an anchor to be at-

tached thereto to allow the rotation of the body in the water, while the remainder of said body is enclosed providing a floatation chamber.

3,694,838

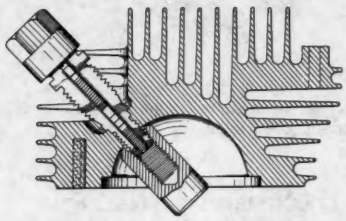
APPARATUS FOR RENEWING DAMAGED SPARK PLUG PORTS

Leslie A. Runton, Canton, Mass., assignor to Phillips Screw Company, Natick, Mass.

Filed Sept. 2, 1970, Ser. No. 68,975

Int. Cl. B23g *1/26, 5/06, 5/20*

U.S. Cl. 10—140 **5 Claims**



A tool for reworking spark plug ports in soft metal cylinder heads and comprising successive sections starting with a reduced extremity tapped to fit the original thread of the spark plug port, followed by two successive reamer sections of smaller and larger diameters, respectively, a tapered lead-in section, a tapping section and a third reamer section having a diameter larger than that of the tapping section to produce a countersink at the mouth of the spark plug port. Beyond the third reamer section the tool is provided with a hexagonal or other polygonal section for engagement by a wrench or the like. A separate handle portion having an internally threaded axial bore is provided for engaging the entering end of the reaming and tapping tool after the latter has penetrated through the cylinder head, which handle portion is provided with serrations surrounding the mouth of its axial bore and is counter-bored at the mouth to receive at least a part of the reamer section of the reaming and tapping tool.

3,694,839

HYDRAULIC ARRANGEMENT FOR DOCKBOARDS

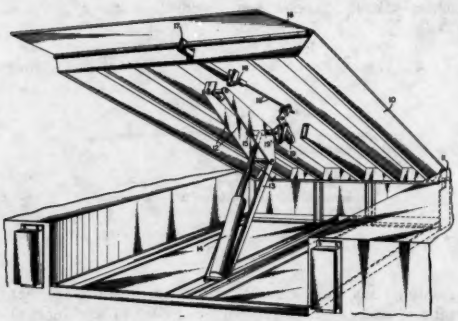
Dermont F. Loblick, Gibbons, Alberta, Canada

Filed June 26, 1970, Ser. No. 50,256

Claims priority, application Great Britain, July 4, 1969, 33,904/69

Int. Cl. B65g *11/12;* **F15b** *15/18*

U.S. Cl. 14—71 **5 Claims**



A hydraulic arrangement for use in dockboard installations which include a hydraulic cylinder for raising the dockboard. The arrangement allows the dockboard to be raised to a position above the vehicle platform, and then to be lowered onto the vehicle platform, all by a single operation of a switch which energizes the hydraulic pump motor. The hydraulic arrangement includes a special control valve situated between the pump and hydraulic cylinder, the valve being also connected to a reservoir, and arranged so that when the pump is operating at normal pressure the control valve allows fluid to flow to the cylinder so raising the dockboard, and when the pump motor is stopped the control valve allows fluid to flow from the cylinder to the reservoir allowing lowering of the dockboard. The circuit includes further valve means to assist reduction of pressure at the pump outlet when the pump motor is stopped, to speed operation of the valve.

3,694,840

DOCKBOARD RAISING MECHANISM

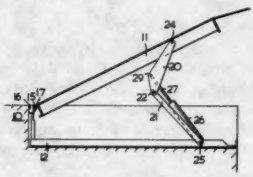
Dermont F. Loblick, Gibbons, Alberta, Canada

Filed June 26, 1970, Ser. No. 50,255

Claims priority, application Great Britain, July 4, 1969, 33,904/69

Int. Cl. B65g *11/00*

U.S. Cl. 14—71 **10 Claims**



A dockboard raising mechanism for a dockboard installation in which the dockboard is hingedly attached at its rear end to the base part, the mechanism including a lever and a link pivotally connected together at their inner ends, and having their outer ends attached to pivots respectively on the dockboard and base parts, the mechanism being powered by a hydraulic cylinder acting between a pivot on the base part and an intermediate pivot point on the lever. This mechanism is compact both vertically and longitudinally, maintains a fairly constant direction of force on the dockboard, and can be arranged to maintain a rearwards force on the dockboard to prevent dislocation of a floating hinge.

3,694,841

Patent Not Issued For This Number

3,694,842

Patent Not Issued For This Number

3,694,843

WIRE STRIPPING MACHINE

Erich R. Seifert, Syracuse, N.Y., assignor to E. R. Seifert, Inc., Syracuse, N.Y.

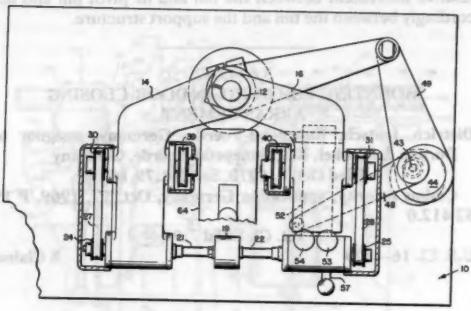
Filed July 28, 1971, Ser. No. 166,740

Int. Cl. A46b *13/02*

U.S. Cl. 15—88 **3 Claims**

A pair of cylindrical wire brushes are mounted one above the other and arranged for simultaneous rotation and axial reciprocation in opposition to each other. The brushes are

carried by respective, generally L-shaped arms which are supported on a common vertical pivot. The generally axial



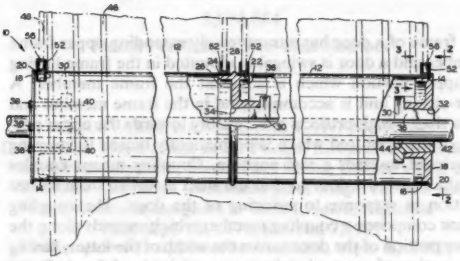
reciprocation is achieved by rotational oscillation of the supporting arms.

3,694,844

BRUSH CONSTRUCTION

Jeff R. Welter, Vancouver, Wash., assignor to Daniel C. Hanna

Filed Nov. 27, 1970, Ser. No. 93,083
Int. Cl. A46b *3/16*
U.S. Cl. 15—182 **7 Claims**



A pair of tubes having filament strip securing clips secured thereto by rivets are mounted on hubs secured to a driving shaft. The hubs have keying slots receiving the heads of the rivets to key the tubes to the hubs.

3,694,845

CLEANSING DEVICE FOR SURGICAL SCRUBS

Harvey J. Engelsher, Yonkers, N.Y., assignor to Horizon Industries Ltd., Bronx, N.Y.

Filed Oct. 14, 1970, Ser. No. 80,530
Int. Cl. A47k *7/02*
U.S. Cl. 15—244 C **2 Claims**

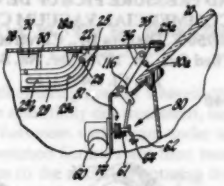
A cleansing device for performing surgical scrubs and having a plurality of apertured foamed polyurethane members stacked and bonded together to form a resilient, composite tubular structure into which is inserted a body member to be cleansed.

3,694,846

MECHANISM FOR OPENING AND CLOSING A COVER FOR A CONCEALED WINDSHIELD WIPER SYSTEM

Eric George Parker, Kettering, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 30, 1970, Ser. No. 93,652
Int. Cl. B60s *1/08*
U.S. Cl. 15—250.16 **3 Claims**



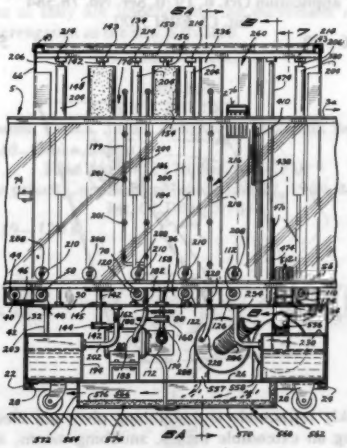
In a preferred form, this disclosure relates to a cover concealed windshield wiper apparatus for an automotive vehicle having a windshield which extends within a well extending transversely of the vehicle and a cover means movable between a closed position in which it covers the well and an open position in which it uncovers the well. The windshield cleaning apparatus includes a pair of spaced oscillatable windshield cleaner assemblies, a drive means including a motor having a rotary output shaft for oscillating the windshield cleaners across the windshield between an outboard position and an inboard position in which the windshield cleaner assembly is disposed within the well, and a cover operating mechanism for moving the cover from its closed position towards its open position, and vice versa, in response to initial and final rotative movement of the output shaft of the wiper motor when wiper operation is initiated and being terminated, respectively.

3,694,847

DEVICE FOR AUTOMATICALLY CLEANING A WINDOW SASH

Frank W. Hetman, and Donald I. Johnson, both of Minneapolis, Minn., assignors to DeVac, Inc., Minneapolis, Minn.

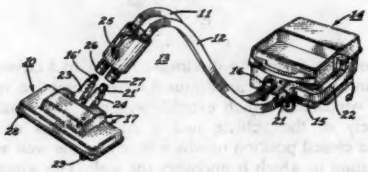
Filed March 25, 1970, Ser. No. 22,527
Int. Cl. A47l *1/02*
U.S. Cl. 15—302 **14 Claims**



A device for automatically cleaning a window sash or the like which includes a support having a housing mounted thereon, operable mechanism mounted on the support for

transporting a window sash upon the support and through the housing, together with means for guiding the sash through the housing, operable mechanism carried by the support for cleaning the sash by means of a liquid as it is transported upon the support and through the housing and means for collecting the liquid used for cleaning.

3,694,848
VACUUM AND PRESSURE PICKUP DEVICE FOR HOME AND COMMERCIAL VACUUM CLEANERS
Frank Alcala, 6950 E. Dixileta Dr., Carefree, Ariz.
Filed Oct. 28, 1970, Ser. No. 84,649
Int. Cl. A47l *5/14*
U.S. Cl. 15—346 **3 Claims**

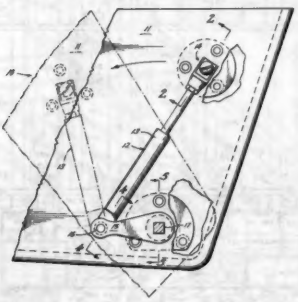


An improved home and commercial vacuum cleaner employing pressure and vacuum functions for picking up dirt and lightweight articles from a rug surface.

3,694,849
Patent Not Issued For This Number

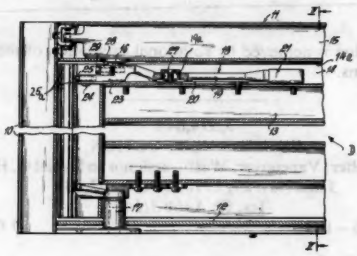
3,694,850
Patent Not Issued For This Number

3,694,851
QUICKLY REMOVABLE, RETRACTABLE SNUBBED PIVOT PIN MECHANISM
James E. Matuska, 13515 25th N.E., Seattle, Wash.
Division of Ser. No. 744,933, July 15, 1968, abandoned. This application Oct. 6, 1970, Ser. No. 78,584
Int. Cl. E05f *3/00*
U.S. Cl. 16—49 **5 Claims**



A quickly retractable and snubbing pivot pin mechanism comprising an extendible means, snubbing means, and link nonrotatably and slideably connected to the extendible pin means and pivotally connected to the snubbing means. This pin mechanism may be combined with other pivotal structure as a storage bin, such as for aircraft passenger carry-on luggage having the axially retractable pivotal pins extendible from the bin into recesses in support structure, as in an aircraft passenger transport, in a nonrotatable fitting and the snubber pivotally connected between the bin and the pin for snubbing relative movement between the bin and its pivot pin and accordingly between the bin and the support structure.

3,694,852
MOUNTING FOR BUILT-IN DOOR-CLOSING ARRANGEMENT
Dietrich Jentsch, Ennepetal-Voerde, Germany, assignor to Dorken & Mankel, KG, Ennepetal-Voerde, Germany
Filed Oct. 8, 1970, Ser. No. 79,149
Claims priority, application Germany, Oct. 17, 1969, P 19 52 412.0
Int. Cl. E05d *7/04*
U.S. Cl. 16—129 **8 Claims**

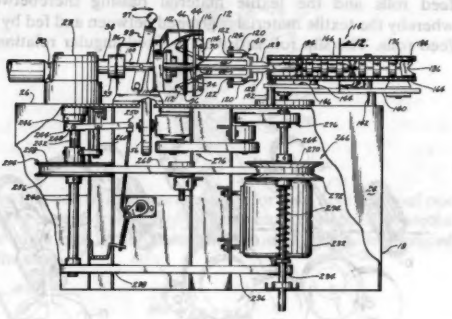


A frame of a door has a transversely extending upper frame member and a door is swingably mounted in the frame having an upper portion which is adjacent the frame member. A door-closing unit is accommodated in the frame member and has a shaft which projects downwardly towards the upper portion of the door and which is permanently biased for turning movement towards a rest position. Coupling means couples the shaft with the door so that the shaft is turned from its rest position in response to swinging of the door. The coupling means comprises a coupling member which extends along the upper portion of the door across the width of the latter, having one portion of greater height at one axial side of the shaft and an other portion of lesser height at the opposite axial side of the shaft. Connecting means connects the coupling member to the door so that it has limited freedom of displacement along the upper portion thereof, and displacing means is provided for effecting such displacement. A cross-head at least in part overlies the upper portion of the coupling member and has a height substantially corresponding to the difference between the greater and the lesser heights, and securing means secures the cross-head to the one portion of the door so that between this one portion and the cross-head the shaft is clamped against rotation relative to the door.

3,694,853
APPARATUS FOR ENCASING A PRODUCT
Charles Austin Greider, Des Moines, Iowa, assignor to Townsend Engineering Company, Des Moines, Iowa
Filed Nov. 9, 1970, Ser. No. 87,818
Int. Cl. A22c *11/10*
U.S. Cl. 17—33 **18 Claims**

An apparatus for encasing a product includes a product encasing machine, a linking apparatus, and a looping apparatus. The product encasing machine includes a rotatable stuffing tube which carries a chuck and a pair of lands adjacent its discharge end. The chuck and lands are mounted so as to rotate in unison with the stuffing tube. The chuck and lands are separable and are adapted to be moved selectively away from the longitudinal axis of the stuffing tube. The linking apparatus includes a pair of loop members carrying pinching members thereon. The pinching members include pinching surfaces adapted to engage and collapse the rotating casing is-

suing from the encasing machine. The pinching surfaces each include at least one portion in vertical alignment below the longitudinal centerline of the loop on which it is carried so that it will travel at a uniform velocity as it is carried by the



loop members. The looping apparatus includes a guide through which the linked casings are fed. The guide is adapted to swing the links in a loop. The looping apparatus also includes a plurality of hooks adapted to catch and carry away the linked casing as it is swung by the guide.

3,694,854

Patent Not Issued For This Number

3,694,855

ADJUSTABLE HANDLE FOR LAWNMOWERS

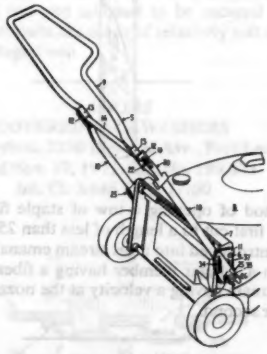
Dolph Allan Meyer; Ross Leslie Phelps; Edward Henry Sykes; Ian Sweet Clipsham; David Paul Seidel; Donald Gray, and Theodore Demetrius Ractivand, all of Milperra, New South Wales, Australia, assignors to Victa Limited, Australia

Filed Sept. 16, 1970, Ser. No. 72,757

Claims priority, application Australia, Apr. 8, 1970, PA 0845/70

Int. Cl. B62b *5/06*

U.S. Cl. 16—111 A **6 Claims**



For a lawnmower a controlling handle articulated for collapsing over the mower, and in which its bottom end is detachably locked to the mower by a pivoted latch plate spring biased to its latching position, a bush over the latch plate pivot pin providing a stop for rotation of the handle in its erected condition, and a spring catch operative between the latch plate and the handle for holding the latch plate open until the handle is at least partly collapsed.

ERRATUM

For Class 17—47 see:
Patent No. 3,694,853

3,694,856

METHOD OF DEFEATHERING POULTRY

Vern F. Kaufman, Lafayette; Alvin A. Klose, Albany, and Morris F. Pool, El Cerrito, all of Calif., assignors to The United States of America as represented by the Secretary of Agriculture

Filed Oct. 30, 1970, Ser. No. 85,786

Int. Cl. A22c *21/04*

U.S. Cl. 17—47 **5 Claims**

Procedure for defeathering poultry wherein the feathers are first loosened by an essentially dry treatment, namely, by contacting the poultry carcasses with steam under subatmospheric pressure. The loosened feathers are then removed by subjecting the carcasses to the action of rotating drums provided with rubber fingers.

3,694,857

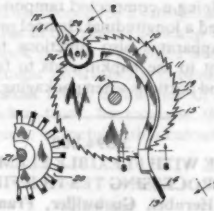
COTTON GIN RIB

James E. Nayfa, 1209 Levee St., Dallas, Tex.

Filed July 23, 1970, Ser. No. 57,488

Int. Cl. D01b *1/08*

U.S. Cl. 19—62 **7 Claims**



A cotton gin rib having embodied therein a roller assembly comprising a pair of disks rotatably arranged in the upper portion of the rib, at the ginning point, or the point at which the lint is detached from the seed, the disks being operative on opposing sides of the rib and having a series of relatively shallow tangential channels on their inner faces diverging outwardly in width and terminating in a peripheral series of serrations having their peaks directed counter to the direction of rotation of the disks as they are impelled by the movement of cotton fibers thereagainst as the saw is rotated.

3,694,858

GILL FALLER

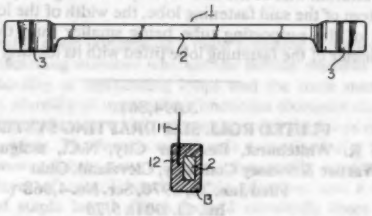
Ichizo Isumi, Osaka, Japan, assignor to Hakushin Seisakusho Co., Ltd., Osaka, Japan

Filed Jan. 20, 1970, Ser. No. 4,218

Claims priority, application Japan, Jan. 27, 1969, 44/7345

Int. Cl. D01g *5/14*

U.S. Cl. 19—129 R **8 Claims**



A lightweight and load-resistant gill faller having a gill faller body of a substantially uniform thickness over an entire length

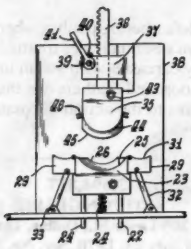
thereof and combing pins advantageously fixedly disposed relative to the body by a plastic layer. Manufacturing method is disclosed as to forming the end portions by pressing with elimination of conventional cut shaping.

3,694,859

APPARATUS FOR FORMING CATAMENIAL NAPKINS

Jacob A. Glasman, 1680 Meridan Ave., Miami Beach, Fla.

Filed Nov. 23, 1970, Ser. No. 92,109
Int. Cl. A61l *15/00*
U.S. Cl. 19—144 S **17 Claims**



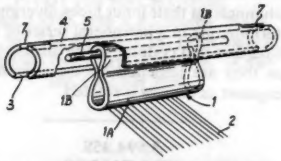
Apparatus for forming permanently curved catamenial napkins having compressed troughts or channels on its effective top surface defining a compacted tampon-like ridge between the channels, and a longitudinal channel on its convex bottom surface. The apparatus also functions to generate lateral creases adjacent to the napkin ends to facilitate folding inwardly of the end portions when packaging.

3,694,860

DEVICE WITH FLEXIBLE ELEMENTS FOR PROCESSING TEXTILE FIBERS

Jean-Frederic Herubel, Guebwiller, France, assignor to N. Schlumberger & Cie, Guebwiller, Haut-Rhin, France

Filed July 2, 1970, Ser. No. 51,912
Claims priority, application France, July 11, 1969, 6923752
Int. Cl. D01h *5/70*
U.S. Cl. 19—236 **13 Claims**



The flexible element for processing fibers is constituted by a tubular flexible member which is flattened in such a manner that its cross-section has a shape which is close to that of a figure eight and consequently determines two hollow lobes, one of which is the fiber-processing lobe while the other is a fastening lobe which is inserted through a longitudinal mounting slot in a supporting tube and maintained applied against the internal wall of the said tube by a locking rod placed in the bottom of the said fastening lobe, the width of the longitudinal slot of the supporting tube being smaller than the external diameter of the fastening lobe fitted with its locking rod.

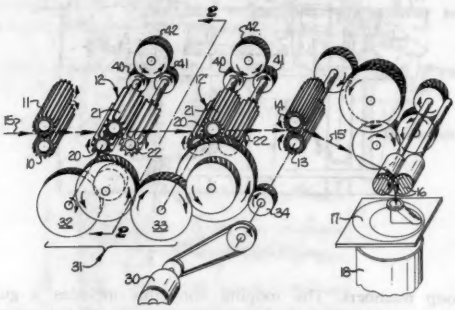
3,694,861

FLUTED ROLL SLIP DRAFTING SYSTEM

Joe R. Whitehurst, Bessemer City, N.C., assignor to The Warner & Swasey Company, Cleveland, Ohio

Filed Jan. 22, 1970, Ser. No. 4,868
Int. Cl. D01h *5/78*
U.S. Cl. 19—259 **7 Claims**

Apparatus for drafting fibrous textile material in which a drafting system includes at least one three-roll control unit having first and second intermeshing fluted feed rolls and a fluted slip roll adjacent on of the feed rolls and spaced forwardly of the nip of the feed rolls. A first one of the feed rolls is driven positively from a power source to, in turn, rotate the other feed roll solely by the intermeshing relationship of the feed rolls and the textile material passing therebetween whereby the textile material is gripped between and fed by the feed rolls. The slip roll is driven in fixed angular relation to



one of the feed rolls, but not to the other, to cause the teeth of the slip roll to register with the grooves between the teeth of said first one of the feed rolls, without gripping the textile material passing therebetween, and thereby to cause the material therebetween to move in an undulating path while a fiber-distributing slip draft thus is applied to the material as it is being pulled therebetween and drafted in its forward course from the nip of the feed rolls.

3,694,862

METHOD FOR OPENING RIGID FIBERS

Kensuke Okuda, Tokyo; Tadaaki Yoshida, Tokyo, and Katsuyuki Sugawara, Tokyo, all of Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 16, 1970, Ser. No. 3,413
Claims priority, application Japan, Jan. 17, 1969, 44/2933
Int. Cl. D01g *1/04*
U.S. Cl. 19—.58 **2 Claims**

A method of opening a tow of staple fibers wherein the fibers are first cut to a length of less than 254 mm. and which are then introduced into a gas stream emanating from a nozzle located in a tubular member having a fiber opening section. The gas stream having a velocity at the nozzle greater than 30 meters per second.

3,694,863

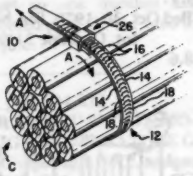
BUNDLE TIE DEVICE

Henry George Wasserlein, Jr., Largo, Fla., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Oct. 14, 1970, Ser. No. 80,548
Int. Cl. B65d *63/00*
U.S. Cl. 24—16 PB **12 Claims**

A bundle tie device. The central portion of a strap, preferably a form of plastic, has vanes which are turned at an

angle to the strap surfaces. Each vane is defined by two transverse slits each ending in holes, the area between adjacent holes comprising a web. Strap ends are overlapped and the



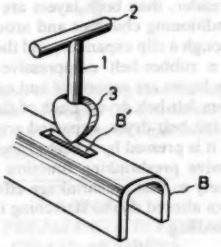
vanes allowed to interleave causing forward hole edges of one vane to engage trailing hole edges of an overlapped vane, the hole edges lock up absorbing the maximum tensile load placed on the strap.

3,694,864

FASTENERS FOR ATTACHING UMBRELLA CLOTHES TO RIBS

Takuo Kawano, 11, Shimogamo Minamishiba-cho, Sakyo-ku, Kyoto, Japan

Filed Sept. 28, 1970, Ser. No. 75,937
Claims priority, application Japan, Dec. 27, 1969, 44/572
Int. Cl. A44b *21/00*; A45b *15/00*
U.S. Cl. 24—73 PF **1 Claim**



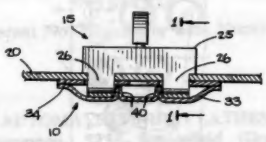
A fastener for attaching an umbrella cloth to a rib is comprised of a longitudinal rod, a transverse member connected to one end of the longitudinal rod and adapted to pierce through the cloth and an anchor provided on the other end of the longitudinal rod and adapted to be secured to the rib. These component parts are made of relatively soft deformable material as an integral unit.

3,694,865

COVERED BACKWASHERS

Randolph J. Mershon, 2100 Linwood Ave., Fort Lee, N.J.

Filed Nov. 17, 1971, Ser. No. 199,671
Int. Cl. A44b *1/42*, *17/00*
U.S. Cl. 24—95 **4 Claims**



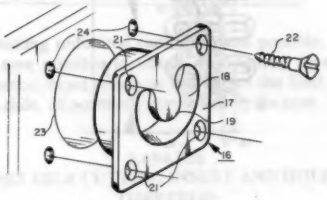
An improved covered backwasher for attaching an engaging member having at least one set of band-shaped prongs to a piece of material. The improved backwasher includes a frontplate having at least one pair of spaced-apart openings therein and a backplate having a recess therein opposite each opening in the frontplate for curling the prongs of the engaging member as they are inserted into the backwasher. The improvement resides in providing at least one rib member on the backplate adjacent the recesses for abutting portions of the edges of the prongs, thus effectively preventing turning of the engaging member relative to the backwasher.

3,694,866

VEHICLE HOOK

Roy R. Maier, 3428 Tennyson St., San Diego, Calif.

Filed Oct. 23, 1970, Ser. No. 83,286
Int. Cl. F16g *11/00*, *11/14*
U.S. Cl. 24—115 J **1 Claim**



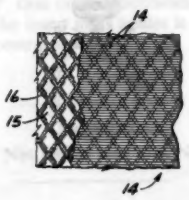
A vehicle hook dimensioned for a substantially flush mounting in a cutout recess in the side of a pickup truck, for example, in which the hook portion is stamped from one flat piece of metal and a circular protrusion is dimensioned for being received by the cutout recess in the side of a vehicle's side panel such as a pickup truck, for example; the hook portion comprising a flat piece of metal with a cutout defining a tongue hook therein.

3,694,867

SEPARABLE CLASP CONTAINING HIGH-LOFT, NON WOVEN FABRIC

Robert J. Stumpf, Appleton, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed Aug. 5, 1970, Ser. No. 61,352
Int. Cl. A44b *17/00*
U.S. Cl. 24—204 **10 Claims**



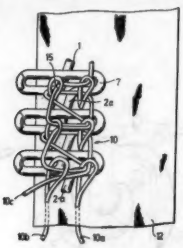
A separable clasp comprising a male fastening member and a female fastening member wherein the female member contains a plurality of upstanding loops and the male member contains a plurality of upstanding functional elements such as hooks or beaded stems which can engage with the loops of the female member. The female member is comprised of a high-loft, nonwoven fabric comprising a substantially continuous backing layer of consolidated flexible adhesive, and a multiplicity of staple length fibers looped outwardly from said backing layer with the ends of such loop imbedded in said backing layer, and said loops being twisted to be in planes extending in the cross direction of the fabric.

3,694,868

SLIDE FASTENER STRINGER

Siegfried W. Spindler, Munich, Germany, assignor to Karl F. Nagele Feinmaschinenbau, Stuttgart-Hohenheim, Germany

Filed Jan. 21, 1970, Ser. No. 4,708
Claims priority, application Germany, Jan. 23, 1969, P 19 03 339.7
Int. Cl. A44b *19/10, 19/34*
U.S. Cl. 24—205.1 C 7 Claims



The interlocking elements of a slide fastener stringer consisting of consecutive sections of a plastic wire have elongated leg portions parallel to each other, transverse to the sequence of elements, and linked by connecting portions common to two adjacent elements. The fastener elements are secured to a carrier tape by two rows of thread loops offset from the connecting portions in opposite directions longitudinally of the leg portions.

3,694,869

TUBE FASTENER

Norio Matsuura, 31 Owada-naka 1-chome, Nishiyodagawa-ku, Osaka, Japan

Filed Jan. 7, 1971, Ser. No. 104,633
Claims priority, application Japan, May 22. 1970, 45/48486
Int. Cl. B65d *63/06*
U.S. Cl. 24—278 11 Claims

A fastener is provided with one or more flexible coiled bands, capable of surrounding a tube or pipe, whereby two or more pieces may be joined together. The band is associated with a body by fixing both ends of the band on opposite portions of the body, and a screw-tightener is provided to exert a downward force on, and to tighten the coiled band.

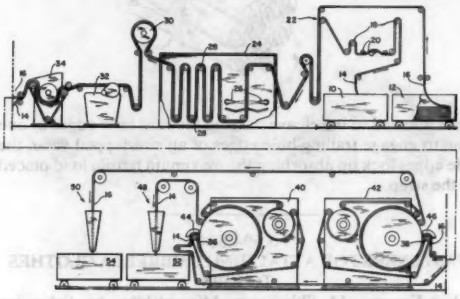
When the tube fastener is placed at the joining point of two pieces of flexible pipe or tubing, and when the tightener is manually operated, the coiled band is forced away from the supporting body and the diameter of the coil is reduced, so that the coiled band exerts a high pressure on the entire contacted portion of the tube along the whole circumference of the coil, thereby joining the two pieces of pipe securely so as to prevent leakage.

3,694,870

APPARATUS FOR THE COMPRESSIVE PRESHRINKAGE OF FABRICS

George Fischer, Troy, N.Y., assignor to Cluett, Peabody & Co., Ltd., Troy, N.Y.

Filed Oct. 30, 1970, Ser. No. 85,453
Int. Cl. D06c *21/00*
U.S. Cl. 26—18.6 1 Claim



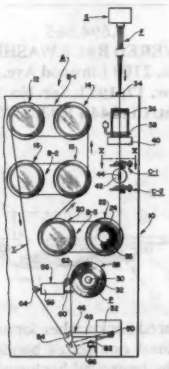
This disclosure teaches a method and apparatus for compressively preshrinking two layers of high-shrinkage fabric simultaneously and for limiting post-processing loss of preshrinkage in either layer to a minimum. Two layers of fabric are drawn through preliminary finishing apparatus, such as a cloth spreader, then both layers are advanced together through a conditioning chamber and around a heated drum, preferably through a clip expander, and then together they are run through a rubber-belt compressive-preshrinkage unit. Thereafter the layers are separated and each is delivered to a separate woolen felt-belt dryer. Each of the layers, as it enters its respective felt-belt dryer, is passed around an input roller against which it is pressed by a heated shoe which performs a final compressive preshrinking function and the layers are dried completely so that preshrinkage effected theretofore in the layers is not altered due to stretching in a wet condition in subsequent handling.

3,694,871

APPARATUS FOR PROCESSING STRAND MATERIAL

John W. Ditzler, Warwick, R.I., assignor to Leesona Corporation, Warwick, R.I.

Filed Sept. 8, 1970, Ser. No. 70,334
Int. Cl. D02j *1/22*
U.S. Cl. 28—71.4 8 Claims



An apparatus for forming, drawing and winding synthetic yarn materials wherein tension on the yarn during passage from the drawing to the winding means is controlled by a com-

pensator device additionally effective to actuate aspirator means and yarn severing means should a yarn break occur, thereby eliminating an excessive build-up of yarn on the drawing means and resultant yarn waste, the apparatus desirably further embodying a plurality of drawing means particularly positioned with respect to one another and providing a generally upwardly directed path for the yarn through specific stages of the drawing cycle.

3,694,872

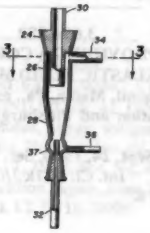
APPARATUS FOR DRAWING THERMO-PLASTIC FILAMENTS IN A HIGH TEMPERATURE GAS VORTEX

Edward H. Sundbeck, Chapel Hill, N.C., assignor to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 455,394, May 13, 1965, Pat. No. 3,551,549. This application April 20, 1970, Ser. No. 43,249

Int. Cl. D01d *5/00*

U.S. Cl. 28—71.3 **3 Claims**



A continuous strand conditioning tube having fluid delivery and discharge ports arranged and internal wall surfaces shaped to provide a vortical flow of fluid around a strand normally passing therethrough.

3,694,873

METHOD OF PREPARING A TUFTED RUG WITH CELLULAR FIBERS

Richard P. Crowley, 125 High St., Wellesley Hills, Mass.

Continuation-in-part of Ser. No. 872,498, Oct. 30, 1969. This application April 2, 1970, Ser. No. 25,275

Int. Cl. D05c *15/00;* **D06c** *7/00*

U.S. Cl. 28—72 P **13 Claims**

A sheet material, such as a needle-punched or tufted fabric, is prepared employing gas-expandable polymeric fibers, such as a polypropylene resin containing an undecomposed blowing agent, and, thereafter, expanding the diameter of the polymeric fibers by heating the fibers to form cellular polymeric fibers, the expansion locking such cellular fibers into the sheet material. The gas-expandable polymeric fibers may be employed either in the backing sheet or as the face fabric.

3,694,874

Patent Not Issued For This Number

3,694,875

AUTOMATIC TURRET LATHES

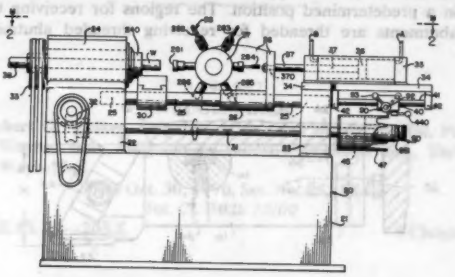
Lukas Zimmermann, 5755 Bloomfield Glens Rd., Birmingham, Mich.

Continuation-in-part of Ser. No. 730,104, May 17, 1968, abandoned. This application July 10, 1970, Ser. No. 53,863

Int. Cl. B23b *7/02*

U.S. Cl. 29—42 **15 Claims**

A hydraulically powered, cam controlled means for actuating the turret slide of an automatic turret lathe including a valve actuator, which translates any input motion received from the cam into endwise motion of the control valve spool regardless of the direction from which this motion is received,



thereby making unlimited cam steepness possible, so that it becomes now possible to obtain any desired speed for the rapid advance, rapid return as well as for the feed motion of the turret slide, all positively controlled by the cam.

3,694,876

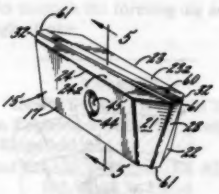
INDEXABLE CUTTING INSERT AND HOLDER THEREFOR

Donald S. Erkfritz, Rockford, Ill., assignor to The Ingersoll Milling Machine Company, Rockford, Ill.

Filed Aug. 28, 1970, Ser. No. 67,949

Int. Cl. B26d *1/00, 1/12*

U.S. Cl. 29—95 **13 Claims**



Rectangular blocks or inserts of cutting material having a center hole are secured by conically headed screws in peripheral pockets in the rotary body of a face milling cutter and adapted for selective indexing about the screw axis into a plurality of cutting positions in each of which a side and end cutting edge is adapted to produce the high rate of metal removal achieved with the face milling cutter disclosed in U.S. Pat. No. 2,186,417. One of the abutments defining each indexed position of the insert in its holder is itself mounted for indexing about its central axis.

3,694,877

Patent Not Issued For This Number

3,694,878

Patent Not Issued For This Number

3,694,879

TOOL HOLDER AND METHOD OF USING

Wilbur L. Kennicott, Ligonier, and James W. Heaton, Greensburg, both of Pa., assignors to Kennametal Inc., Latrobe, Pa.

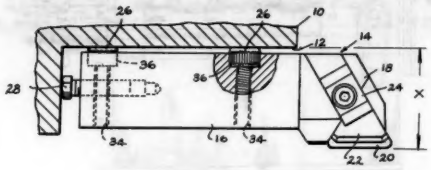
Filed Sept. 28, 1970, Ser. No. 75,873

Int. Cl. B26d *1/00;* **B23b** *29/00*

U.S. Cl. 29—96 **6 Claims**

The specification discloses a tool holder, especially for receiving throw away inserts in which the tool holder is a bar-

like member adapted for being clamped in a tool support member. The bar-like member has abutment elements thereon to abut the support member to locate the tool holder in a predetermined position. The regions for receiving the abutments are threaded for receiving threaded abutment



screws and are adapted at their outer ends to receive pressed in abutment elements which can be ground to a precise dimension whereby the mounting of the tool holder in the support member will provide for precise fixed positioning of an insert mounted on the holder.

3,694,880

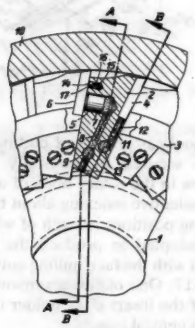
MILLING TOOL WITH INDIVIDUALLY ADJUSTED CUTTERS

Adolf Wolf, Jes-Juhl Weg 9, Hamburg 52, Germany

Filed Nov. 18, 1970, Ser. No. 90,852

Int. Cl. B26d *1/12*

U.S. Cl. 29—105 **4 Claims**



This invention relates to a milling tool of composite construction having a base member, a plurality of segmental pieces contained on the base member by a surrounding ring member wherein the segmental members provided cutter recesses and contain separate cutter adjusting and clamping means. The said clamping and adjusting means being hydraulically operable from separate sources.

3,694,881

METHOD FOR MANUFACTURING SQUIRREL-CAGE ROTORS FOR FLUID MOVING DEVICES

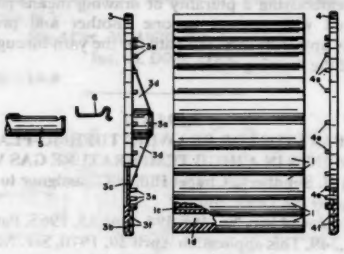
Dov Z. Glucksman, 26 Chase Ave., West Newton, Mass.

Division of Ser. No. 729,031, May 14, 1968, Pat. No. 3,536,416. This application June 10, 1970, Ser. No. 44,990

Int. Cl. B21k *3/04*; **B23p** *15/02*, *15/04*

U.S. Cl. 29—156.8 R **5 Claims**

A method for manufacturing squirrel-cage rotors for fluid moving devices by assembling blade-shaped tubular bars of a thermoplastic material to form spatially a cylindrical pattern, and mounting end members of a thermoplastic material on said bars by insertion of pin means integral with said end mem-



bers into the open ends of said tubular bars, and finally bonding the bars and the end members by ultrasonic welding into a unitary structure.

3,694,882

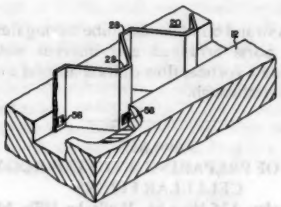
METHOD FOR PROVIDING A CORRUGATED SEAL IN AN ELASTIC FLUID MACHINE

John William Desmond, Media, Pa., assignor to Westinghouse Electric Corporation and Pittsburgh Electric Corporation, Pittsburgh, Pa.

Filed Sept. 24, 1970, Ser. No. 75,194

Int. Cl. B21k *3/04*

U.S. Cl. 29—156.8 R **6 Claims**



A turbine rotor blade path seal consists of a corrugated strip of sheet metal secured edgewise in an annular groove in the turbine cylinder or casing. The corrugated seal strip requires no edge rolling for the various diameters of the different stages of a multi-stage turbine. Thus, one pattern of a seal strip which is easily customized and assembled can be utilized for all stages of a turbine. The seal strip is caulked or interlocked in the groove at assembly by means of a special tool.

3,694,883

METHOD OF MOUNTING A NOZZLE INSERT

Eugene L. Olcott, Falls Church, Va., assignor to The United States of America as represented by the Secretary of the United States Air Force

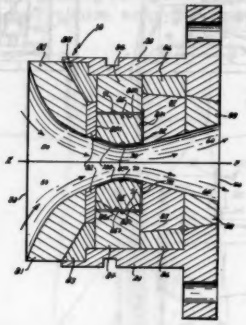
Filed May 20, 1970, Ser. No. 50,001

Int. Cl. B21d *53/00*

U.S. Cl. 29—157 C **1 Claim**

A method of mounting in a composite-type rocket nozzle, a nozzle insert which is substantially annular in configuration and which has four surfaces, three of which are external and uncoated, and the fourth of which is internal and is coated with pyrolytic graphite. The method includes the steps of coating the insert on the three uncoated external surfaces with a thin layer of silicone grease, coating two of the external surfaces with a layer of a filled epoxy cement on the thin layer of silicone grease, coating the third external surface with a layer of silicone rubber on the thin layer of silicone grease, and

placing the insert in its proper position in the composite-type rocket nozzle. This method of mounting promotes the service



life of the insert by eliminating the application of tensile stresses to the insert.

3,694,884

METHOD FOR MANUFACTURING A PISTON VALVE FOR VALVED WIND MUSICAL INSTRUMENTS

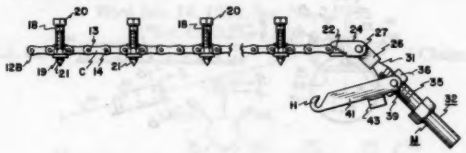
Masaru Kondo, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Japan

Filed June 17, 1970, Ser. No. 47,013

Claims priority, application Japan, June 20, 1969, 44/48548

Int. Cl. B21k *29/00*

U.S. Cl. 29—157.1 R **4 Claims**



A method for manufacturing a piston valve comprising boring a plurality of pairs of holes in the predetermined portions of the peripheral surface of the hollow sliding member of the piston valve, said member being made of wear resistant material such as monel metal, inserting a flexible rod or tube through each pair of the holes, filling the hollow sliding member with moldable material with the rod kept in a predetermined curved state to permit the material to be cured, and thereafter withdrawing the rod from the member.

3,694,885

METHOD OF MANUFACTURING AN ESCAPEMENT LEVER FOR A TIMEPIECE

Andre Simon-Vermot, Le Locle, Switzerland, assignor to Les Fabriques d'Assortiments Reunies, Le Locle, Neuchatel, Switzerland

Filed July 2, 1970, Ser. No. 52,093

Claims priority, application Switzerland, July 11, 1969, 10607/69

Int. Cl. B23p *13/00*

U.S. Cl. 29—177 **4 Claims**

A method of manufacturing an escapement lever for a timepiece, characterized by blanking out the lever of a metal sheet, the pallets being made integral with the body of the lever, depositing electroless nickel on to the whole piece and subjecting the lever to a finishing operation carried out so as to obtain cold rolled properties in the layer of chemical nickel, this finishing operation determining the final dimensions of the lever, to which the pallet arbor and the safety-pin are then secured.

3,694,886

Patent Not Issued For This Number

3,694,887

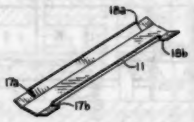
WEDGEMAKER

Robert G. Walker, Brighton, Mich., and Donald E. Hill, Ft. Wayne, Ind., assignors to Industra Products Inc., Fort Wayne, Ind.

Filed Oct. 30, 1970, Ser. No. 85,355

Int. Cl. H02k *15/00*

U.S. Cl. 29—205 E **9 Claims**



An improved method and apparatus for making insulating wedges for use in an automatic coil placing machine which first severs the wedge material and then contemporaneously forms and slits the wedge is disclosed. The machine is adapted to provide wedges of at least two different lengths and to slit only the longer wedges. The improvement comprises a power operated punch, a forming die, and a plurality of cutting surfaces some of which are retractable wherein the punch forces the wedge blanks through the forming die and past the cutting surfaces in a single stroke.

3,694,888

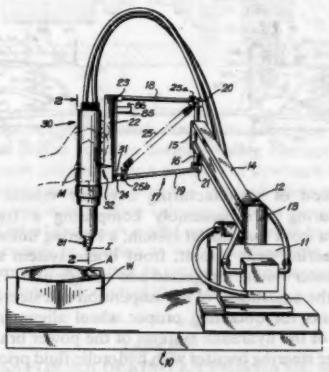
INSERT DRIVER DEVICE

Robert W. Bosse, Englewood Cliffs, N.J., assignor to Groov-Pin Corporation, Ridgefield, N.J.

Filed Oct. 22, 1970, Ser. No. 82,999

Int. Cl. B23p *19/06*

U.S. Cl. 29—240 **10 Claims**



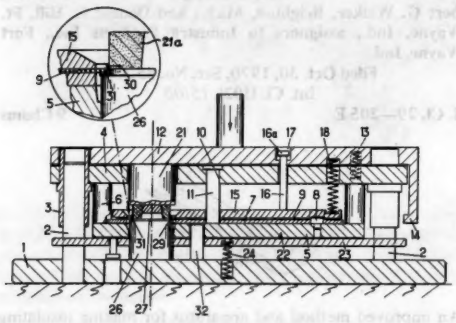
A device for automatically applying inserts into wood, plastic, aluminum or other relatively soft material, comprising a motor driving a rod threaded at its outer end to receive an insert, the rod extending through a hollow member against the end of which an end of the insert is adapted to abut, frictionally to lock the rod and the hollow member together, means being provided to permit simultaneous rotation of the rod and the hollow member when the insert is being applied, and to restrain rotation of the hollow member when the rod is reversed for removal from the insert.

3,694,889

METHOD OF SETTING FIRE RINGS IN CYLINDER HEAD GASKETS

Pierre Pommier, Saint-Priest, France, assignor to Societe Anonyme dite: CEFILAC, Paris, France

Filed Oct. 5, 1970, Ser. No. 77,841
Claims priority, application France, Oct. 10, 1969, 6934752
Int. Cl. B23p 17/00
U.S. Cl. 29—412 2 Claims



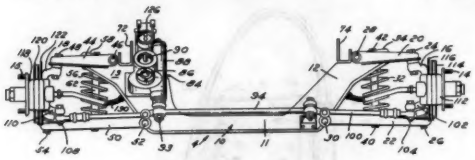
Method of setting fire rings in gaskets according to which a metallic sheet is provided with holes having upstanding cylindrical rings dimensioned and positioned to register with holes in the gasket. Rings encircling these rims are then cut from the metallic sheet while retaining them in their relative position, the gasket is placed on the rings so that the rims project through the gasket holes, and the rims are pressed down against the gasket. The invention includes a machine which carries out all but the first of these steps successively and automatically.

3,694,890

METHOD OF MANUFACTURING A MOTOR VEHICLE

Klaus H. Arning, Birmingham, and Robert J. Rumpf, Grosse Pointe, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed July 6, 1970, Ser. No. 52,236
Int. Cl. B23p 19/00
U.S. Cl. 29—428 10 Claims



A method of manufacturing a motor vehicle including manufacturing a subassembly comprising a frame cross member, a front suspension system, a steering linkage system, power steering gear system, front brake system and power brake booster system integrated into a single unit. The method includes the adjustment of the suspension and steering linkage components for obtaining proper wheel alignment and the charging of the hydraulic systems of the power brake booster and power steering booster with hydraulic fluid prior to the installation of the subassembly into the vehicle body.

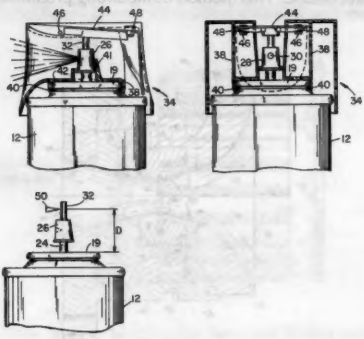
3,694,891

PROCESS OF ASSEMBLING PRESSURE CONTAINER AND OVERCAP

Edward J. Adams, St. Paul, Minn., assignor to The Gillette Company, Boston, Mass.

Filed Sept. 29, 1970, Ser. No. 76,535
Int. Cl. B23p 17/04; B23q 3/18; B26d 7/16
U.S. Cl. 29—428 3 Claims

Assembly of a valved pressurized container with an overcap arranged to actuate the valve is facilitated by mounting an oversize actuating member on the valve, then cutting it to size



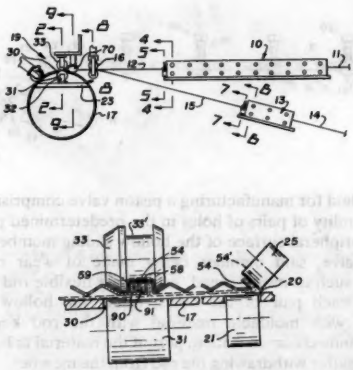
using as a reference the same portion of the container as is in contact with the overcap.

3,694,892

APPARATUS FOR AND THE METHOD OF MAKING SPIRAL SEAMED LAMINATED SHEET METAL PIPE

Reginald D. Hale, Vancouver, British Columbia, Canada, assignor to Spir-L-OK Industries Limited, Vancouver, British Columbia, Canada

Filed Oct. 26, 1970, Ser. No. 83,904
Int. Cl. B23p 19/00
U.S. Cl. 29—429 8 Claims



Method of and apparatus for making spiral seamed laminated sheet metal pipe having a corrugated outer surface and a smooth inner surface. There is described a method which consists in denting the pipe in the region where seaming takes place and subsequently bringing the pipe to size and seaming between seaming rolls on a fixed mandrel, in this way to avoid large gaps at the inside of the seam and to maintain the pipe of substantially constant diameter.

3,694,893

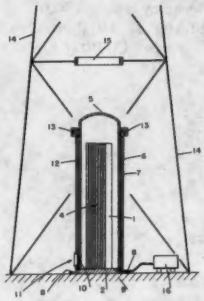
METHOD FOR CONSTRUCTING CYLINDRICAL STRUCTURES SUCH AS STEEL CHIMNEYS

Hiroshi Ashida, Nishinomiya, Japan, assignor to Hitachi Shipbuilding and Engineering Co., Ltd.

Filed April 9, 1970, Ser. No. 26,835
Claims priority, application Japan, June 11, 1969, 44/46397
Int. Cl. B23p 19/00, 17/00
U.S. Cl. 29—431 8 Claims

Constructing cylindrical structures such as tall steel chimneys, advertisement towers and antenna supports by separate-

ly preparing a cylinder with a closed upper end, which will become the top end section of the intended cylindrical structure, and a plurality of extension cylinders to be successively connected thereto, fitting said closed-end cylinder to a fixed guide in telescopic relation, supplying compressed gas into an



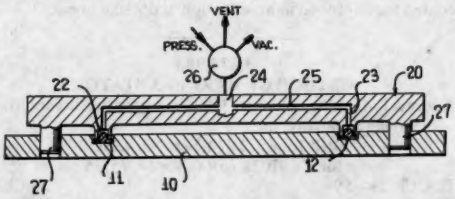
inside air-tight space surrounded by said cylinder and guide to lift the closed-end cylinder, connecting one of the extension cylinders to the lower end of the lifted cylinder and lifting the extended cylindrical structure by again utilizing compressed gas. These procedures are repeated whereby a cylindrical structure of desired height can be safely constructed.

3,694,894

METHOD OF INSERTING A SEAL IN A FACE-CUT GROOVE

Jerry G. Jelinek, Whittier, and Edward Reinsch, Palos Verdes, both of Calif., assignors to Parker-Hannifin Corporation, Cleveland, Ohio

Filed Jan. 14, 1970, Ser. No. 2,775
Int. Cl. B23p *11/02*
U.S. Cl. 29—451 **7 Claims**



This invention relates to a method of and a device for enabling the insertion of a sealing element into a face-cut groove with a minimum of time and effort, together with the accuracy and quality required. This particularly has to do with practical field maintenance of seals while eliminating all problems usually encountered during installation of prior insertable seals. This is accomplished by means of a fixture which holes the seal element by means of an applied vacuum, and the utilization of the fixture to insert the seal element into a groove quickly and accurately.

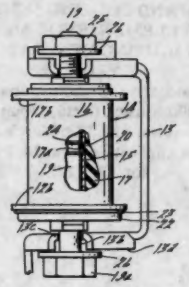
3,694,895

METHOD OF MOUNTING AN AUTOMOBILE ENGINE

Lawrence E. Werner, Grosse Pointe, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Division of Ser. No. 884,857, Dec. 15, 1969. This application June 9, 1971, Ser. No. 151,325
Int. Cl. B23p *21/00*
U.S. Cl. 29—469 **2 Claims**

An automobile engine is assembled with the body by providing an engine mount comprising a tubular member enclosed within an elastic bushing under sufficient pressure to extrude a portion thereof through a radial opening in the tubular member. A bolt having an annular detent receiving groove is adjustably inserted into the tubular member until its groove receives the bushing extruded portion at a detent position with the bolt ends extending beyond the assembly of the bushing and tubular member. The engine with said assembly secured thereto is lowered toward the body in predetermined relationship by confining the extending bolt ends within a pair of upwardly opening guide slots in a corresponding pair of brackets secured to the body and guiding said bolt ends downwardly along said slots to predetermined seated locations at the bases of said slots, whereupon the bolt is withdrawn from its detent position and clamped securely to said brackets in final position by tightening a nut at one end of the bolt.

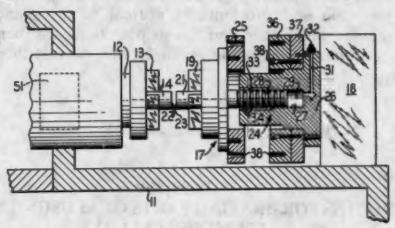


3,694,896

METHOD OF FRICTION WELDING

Calvin D. Loyd, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Division of Ser. No. 704,873, Oct. 26, 1970, Pat. No. 3,563,444. This application Oct. 26, 1970, Ser. No. 84,140
Int. Cl. B23k *27/00*
U.S. Cl. 29—470.3 **3 Claims**



An inertia welding machine having its nondriven tailstock mounted to permit rotation during welding contact between two weld parts and providing a plurality of flywheels for selective rotational association with the tailstock during welding. To provide optimum surface velocity between parts having a small weld interface which would normally result in excessive rotational energy in relation to weld requirements, the nondriven tailstock is permitted to rotate with an associated inertia mass to absorb a portion of the energy.

3,694,897

PROCESS FOR SOLDERING AN INORGANIC SOLID OXIDE PRODUCT

Kazuyuki Akeyoshi, Yamato, and Naonori Hayashi, Tokyo, both of Japan, assignors to Asahi Glass Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 769,044, Oct. 21, 1968, Pat. No. 3,623,906. This application Sept. 23, 1970, Ser. No. 74,901
Int. Cl. B23k *31/02*
U.S. Cl. 29—473.1 **4 Claims**

A soldering alloy which contains 40–98% by wt. of Pb; 1.8–50% by wt. of Sn; 0.05–10% by wt. of Zn; and 0.05–10%

by wt. of Sb. A process for adhering said solder to a solid inorganic oxide product, such as glass or ceramic whereby ultrasonic vibration is applied.

3,694,898

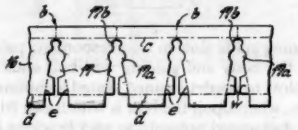
METHOD OF FORMING CARRIER MEANS FOR CARRYING AND COOLING SEMI-CONDUCTOR RECTIFIER ELEMENTS FOR AN ALTERNATING CURRENT LIGHTING GENERATOR FOR MOTOR VEHICLES

Suguru Sato, Motogariya Shataku, Japan, assignor to Nippon Denso Kabushiki Kaisha, Bachi, Japan

Division of Ser. No. 811,323, March 28, 1969, Pat. No. 3,553,505. This application Sept. 24, 1970, Ser. No. 74,999

Int. Cl. B23k *31/02*

U.S. Cl. 29—477 **4 Claims**



A method of forming carrier means for carrying and cooling semi-conductor rectifier elements for an alternating current lighting generator for motor vehicles in which a narrow straight strip of sheet metal is first formed with a plurality of cutouts which extend uniformly spaced from each other and transverse to the longitudinal direction of the strip from one toward but short of the other edge of the strip, to thus provide a plurality of strip sections connected to each other at the other edge. Opposite edge portions of the strip are then bent to one side and substantially normal to the plane of the remainder of the strip and the strip sections are then bent in the aforementioned plane about an axis normal thereto to a polygonal configuration.

3,694,899

PROCESS FOR BRAZING PARTS OF ALUMINIUM AND ALUMINIUM ALLOYS

Andre Chartet, Meudon, France, assignor to Societe Anonyme des Usines Chausson, Asnieres, France

Filed Oct. 7, 1970, Ser. No. 78,971

Claims priority, application France, Oct. 22, 1969, 6936199

Int. Cl. B23k *31/02*; **B23l** *35/36*

U.S. Cl. 29—495 **7 Claims**

Process in which the parts to be brazed are dipped in an acidic or alkaline aqueous bath containing further a metallic salt or oxide thereof until the aluminum oxide is replaced by a metallic coating. The parts are then removed from the bath, then rinsed and dried to be assembled by brazing.

3,694,900

Patent Not Issued For This Number

3,694,901

Patent Not Issued For This Number

3,694,902

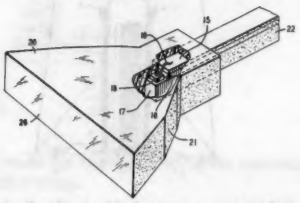
ELECTROLUMINESCENT DISPLAY APPARATUS

Waldo Ditmar Apgar, Fleetwood, Pa.; Lucian Arthur D'Asaro, Madison; Richard Wayne Dixon, Morristown, both of N.J.; William Henry Dufft, Shillington, Pa.; Harry Eugene Elder, Wyomissing, Pa., and Phillip Edward Fraley, Reading, Pa., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Aug. 31, 1970, Ser. No. 68,426

Int. Cl. B01j *17/00*

U.S. Cl. 29—588 **3 Claims**



A method of fabricating electroluminescent display apparatus by forming a lead-frame from a laminate comprising two metal layers and an intervening insulating layer, is disclosed. The lead-frame comprises an array of laminate strip members, the tip of each of which may be cut back to expose the inside face of one metal layer. A light emitting semiconductor device then is mounted and electrically connected either to the inner or end face of the projecting metal layer. The other contact of the device is connected, typically by a wire lead or a metal beam lead, to the other metal layer of the laminate strip. Each semiconductor device and adjoining portion of the conductive mounting is encapsulated in a molded transparent plastic member, and supporting portions of the lead-frame then are severed to make each encapsulated diode available for individual assembly. Portions of the outer surface of the molded transparent member may be faceted and metal coated for improved light reflection and visual impact.

3,694,903

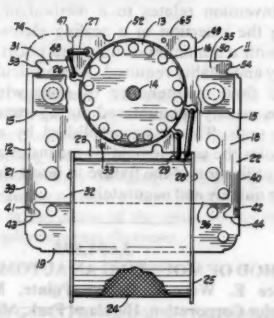
METHOD OF MAKING A STATOR

Andrew F. Deming, Alliance, Ohio, assignor to Alliance Manufacturing Company, Inc.

Filed June 3, 1970, Ser. No. 43,039

Int. Cl. H02k *15/00, 15/14, 15/16*

U.S. Cl. 29—596 **24 Claims**



A two-pole off-set construction of an electric motor has winding portion laminations and rotor portion laminations which are separate so that the winding may be formed or placed on the winding portion and then the two portions of the stator interconnected to complete the flux path for the rotor circumscribed by a rotor aperture in the rotor portion. There must be a window space between these two portions to accommodate the winding on the winding portion and formerly the

metal removed from this window space was scrap metal, necessitating an excessive amount of steel lamination material. In this invention, the layer of lamination is made in two complementary pieces and this layer has a rotor portion and a winding portion. The two separate lamination pieces for a layer of complete lamination are to permit the winding to be placed on this complete stator. The material removed from the window space instead of being scrap is utilized as an active flux carrying member by being unitary with one of these first and second lamination pieces. In a first embodiment of the invention the legs joining the end areas of the winding and rotor portions are off-set in the direction toward the winding portion by approximately one-eighth of their length resulting in the bight of the rotor portion, which contains the rotor aperture, being displaced in a direction opposite to the leg extensions. Accordingly, laminations for only the rotor portion are successively formed from a strip of lamination material with the bight of the rotor portion extending into the space between the two legs of the next adjacent rotor portion lamination in the strip of lamination material. In a second embodiment of the invention the rotor and winding portions are unitary on a first piece of the lamination and complementary with a small second piece of lamination. The first pieces of the lamination are nested or interlocked together as they are formed from the lamination steel, utilizing the window space of one piece as the winding portion of the adjacent first lamination piece. This utilizes lamination material from the window space which would otherwise be scrap and saves approximately one-eighth of the steel used in making the motor. The winding portion or second piece laminations are separately made adjacent to each other in a strip of lamination material. The foregoing abstract is merely a resume of one general application, is not a complete discussion of all principles of operation or applications, and is not to be construed as a limitation on the scope of the claimed subject matter.

3,694,904

Patent Not Issued For This Number

3,694,905

IGNITION DISTRIBUTORS

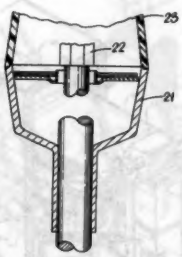
William Harold Cooksey, Walsall, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

Filed Aug. 12, 1970, Ser. No. 63,246

Claims priority, application Great Britain, Dec. 24, 1969, 62,777/69

Int. Cl. H02k *15/02*

U.S. Cl. 29—598 **4 Claims**



A method of assembling an ignition distributor including the steps of engaging an annular timing plate with an annular base plate so that the timing plate is capable of angular movement with respect to the base plate. Three ears formed on the base plate overlie the timing plate, and the timing plate is rotated relative to the base plate, so that three ramps provided on the timing plate engage the ears respectively. As the timing plate is rotated the ramps bend the ears away from the timing plate, so that a clearance exists between the ears and the timing plate which is substantially equal to the heights of the highest part of the ramps above the surface of the timing plate. Thus the timing plate will be capable of a predetermined degree of axial movement relative to the base plate.

3,694,906

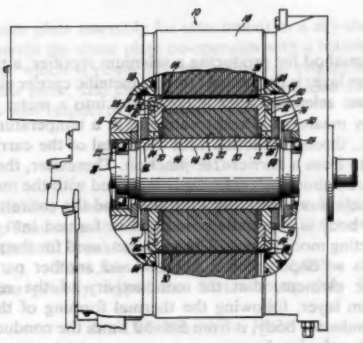
METHOD FOR MANUFACTURING A HIGH SPEED SQUIRREL CAGE ROTOR

William E. Rank, Dayton, and Gene L. Dafler, New Lebanon, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Division of Ser. No. 52,558, July 6, 1970, Pat. No. 3,662,200. This application Oct. 14, 1971, Ser. No. 189,455

Int. Cl. H02k *15/02, 15/10*

U.S. Cl. 29—598 **3 Claims**



In a preferred embodiment, a rotor for a dynamoelectric machine and method for manufacture includes a laminated rotor core mounted on a shaft sleeve which is mechanically expanded by an interference fit with the motor shaft. A pair of rotor end supports are mounted on the shaft sleeve in an axially supporting relationship with the ends of the rotor core and in a circumferentially supporting relationship with the ends of a winding carried by the rotor core.

3,694,907

METHOD OF MAKING LOW INERTIA ROTOR FOR DYNAMO ELECTRIC MACHINES

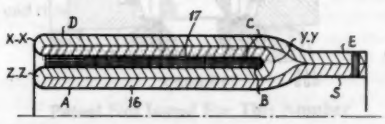
Pierre Margrain, and Gerard Lacroux, both of Malakoff, France, assignors to Etablissements E. Ragonot

Filed July 6, 1970, Ser. No. 52,595

Claims priority, application France, July 10, 1969, 6923496

Int. Cl. H02k *15/02*

U.S. Cl. 29—598 **9 Claims**



The complete winding outline of a rotor, including the forward as well as the return conductor of the winding loops are applied, in flat form, to a flexible sheet, as a printed or laminated conductor. The flexible sheet has a fold line, across which the conductor portions forming the coil ends extend. The sheet is then folded along the fold line upon itself and rolled into a hollow cylinder, to form a self-supporting rotor. If desired, an internal support of a plastic, metal tube, or the like can be applied Multiple-layer windings can be formed by first applying the winding outline to the sheet, and then folding the sheet-zig-zag upon itself with additional insulating layers where conductors would contact each other, and then rolling the folded sheet with the conductors thereon into a cylinder.

3,694,908

METHOD OF PRODUCING A SELENIUM RECTIFIER

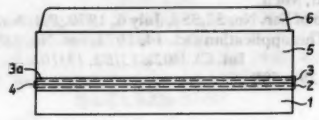
Heinz Eggert, Berlin 33, Germany, and Ekkehard Schillmann, Tongi-Dacca, Pakistan, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed April 15, 1970, Ser. No. 31,126

Claims priority, application Germany, April 25, 1969, P 19 22 140.0

Int. Cl. B01j 17/00; H01l 7/24

U.S. Cl. 29—590 6 Claims



In a method for producing a selenium rectifier, a thin base selenium layer is first placed upon a metallic carrier electrode. This base selenium layer is converted into a metal selenide layer by means of a heat treatment, at a temperature above 250° C., through reaction with the metal of the carrier electrode, to from a barrier-free junction. Thereafter, the unconverted remaining selenium layer is coated with the main layer of the selenium semiconductor body and the entire semiconductor body is thermally converted or formed into the best conducting modification. The selenium, used for the selenium layer, is so doped with a halogen and another particularly metallic element, that the conductivity of the remaining selenium layer, following the thermal forming of the entire semiconductor body, is from 5 to 50 times the conductivity of the main selenium layer.

3,694,909

METHOD FOR MANUFACTURING ELECTRIC ROTARY MACHINES

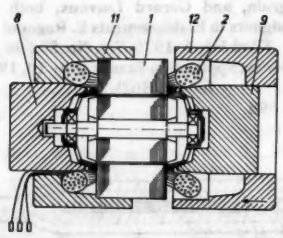
Stig Lennart Hallerback, 12 Blodboksgatan, Vastra Frolunda, Sweden

Filed Nov. 18, 1970, Ser. No. 90,714

Claims priority, application Netherlands, Nov. 19, 1969, 6917401

Int. Cl. H02k 15/00, 15/14, 15/16

U.S. Cl. 29—596 7 Claims



The present disclosure relates to a manufacturing method for electric rotary machines. By employing this method the machines, e.g. electric motors, can be submitted to a running test before the rotor assembly is permanently mounted by bonding its cup-shaped bearing supports to the ends of the stator core inside the stator winding heads. Machines which fail to meet the requirements need not be scrapped, but can be readily disassembled for recovering their good components.

3,694,910

Patent Not Issued For This Number

3,694,911

WAVEGUIDE PROCESS

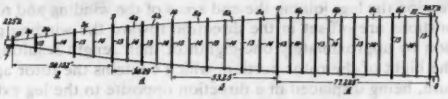
Kiyo Tomiyasu, Scotia, N.Y., assignor to General Electric Company

Division of Ser. No. 754,700, Aug. 22, 1968, Pat. No. 3,569,871.

This application June 24, 1970, Ser. No. 59,841

Int. Cl. H01p 11/00

U.S. Cl. 29—600 3 Claims



A low-cost waveguide taper for interconnecting two circular waveguides which differ substantially in size is constructed from a plurality of reinforced, thin-walled conical sections having predetermined taper angles and axial lengths to minimize the effects of spurious modes generated at the junctions of the conical sections. For the particular example of a waveguide taper interconnecting a circular waveguide of 2.25 inch diameter to an oversize circular waveguide of 29.7 inch diameter and suitable for the propagation of the TE°_{01} mode at X-band frequency, the taper comprises 12 conical sections having four different taper angles. The three cone-cone junctions and the cone oversize waveguide junction form two pairs of mode converting junctions which are interlaced such that the first and third and also the second and fourth junction effects each cancel as a pair and this interlaced concept permits fabrication of the particular waveguide taper having a minimum length of 17.5 feet. The larger diameter conical sections of the taper are fabricated by forming longitudinal welds along the seams formed by rolling thin aluminum sheet metal into the desired conical shapes. The sections are then precisely aligned and connected together by means of flanges epoxied on the sections.

3,694,912

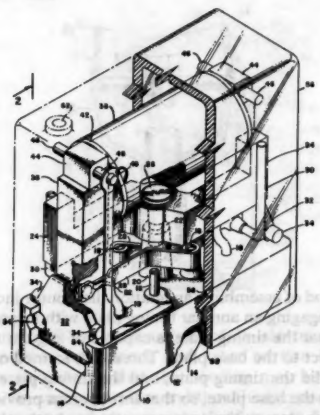
METHOD OF MANUFACTURING AN ELECTRICAL RELAY

Anthony E. Sprando, Portland, and Richard L. Sollars, Hillsboro, both of Oreg., assignors to Textronix, Inc., Beaverton, Oreg.

Division of Ser. No. 611,540, Jan. 23, 1967, Pat. No. 3,519,966. This application March 23, 1970, Ser. No. 30,369

Int. Cl. H01f 7/06

U.S. Cl. 29—602 5 Claims



An electrical relay including a plastic header or base and a plastic shell hermetically sealed to the header. Electrical ter-

minals are sealed into said header and extend into a recessed under portion, the periphery or skirt of which is sealed to the plastic shell. The header is also formed with an integral boss providing bearing means for a balanced armature. Accurately positioned plastic core supporting members are cast in fastening relation to the relay's core, and a plastic coil bobbin is similarly cast around the core.

3,694,913

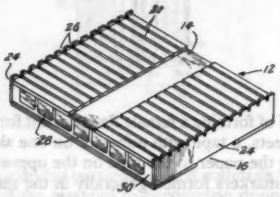
METHOD FOR WIRING CORE MEMORY CORES

Walter J. Draving, Willow Grove, and Robert C. Draving, Fort Washington, both of Pa., assignors to Micro-Miniature Parts Corporation, Willow Grove, Pa.

Filed Jan. 12, 1970, Ser. No. 2,165

Int. Cl. H01f *7/06*

U.S. Cl. 29—604 **14 Claims**



A method and apparatus for wiring the apertured cores of a core memory which includes placing the cores in a magnetic field and translating the wires through the apertures by means of magnetic needles.

3,694,914

CRYOGENIC CONNECTION FOR THE TRANSMISSION OF HIGH ELECTRIC POWER AND METHOD OF MANUFACTURE THEREOF

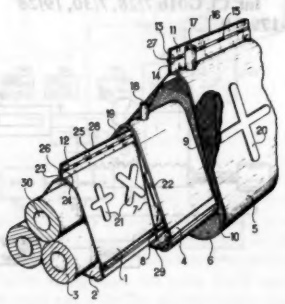
Marcel Aupoix, Paris, and Andre Culand, Gif-sur-Yvette, both of France, assignors to Compagnie Generale D'Electricite and L'Air Liquide Societe Anonyme Pour L'Etude et L'Exploitation Des, Paris, France

Filed Sept. 8, 1971, Ser. No. 178,614

Claims priority, application France, Sept. 8, 1970, 7032584

Int. Cl. H01b *13/00*

U.S. Cl. 29—624 **4 Claims**



A cryogenic connection which can be formed directly on the ground on which it is to be laid includes a fluid-tight internal enclosure adapted to carry a cryogenic fluid, a metallic thermal screen surrounding the internal enclosure, a metallic external enclosure surrounding the thermal screen and suspension means for suspending the internal enclosure in the thermal screen and the thermal screen in the external enclosure.

3,694,915

TILTABLE SHEAR PLATE

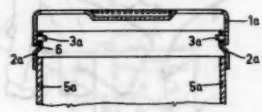
Bernard Joseph Beusink, Clementinalaan 10, Oerle, Netherlands

Filed June 24, 1970, Ser. No. 49,130

Claims priority, application Netherlands, June 26, 1969, 6909789

Int. Cl. B26b *19/14*

U.S. Cl. 30—32 **10 Claims**



A shear plate assembly for attachment to a dry-shaver casing wherein the shear plate co-operates with a rotating cutter member which is resiliently maintained in engagement with the shear plate, and the shear plate is suspended so as to be tiltable with respect to the casing.

3,694,916

DRY SHAVER

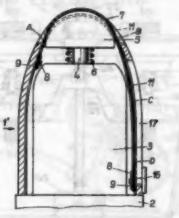
Luhr Harms, Oberursel/Taunus, and Gunter Voigt, Schoenberg/Taunus, both of Germany, assignors to Braun Aktiengesellschaft, Frankfurt (Main), Germany

Filed July 10, 1970, Ser. No. 53,859

Claims priority, application Luxembourg, July 18, 1969, 59.126

Int. Cl. B26b *19/04, 19/20*

U.S. Cl. 30—43.1 **5 Claims**



A dry shaver has a reciprocating cutter and a shearing blade having at least two different fields of perforations. The shearing blade is bent to a position over the reciprocating blade, and the selected perforated field can be brought against the reciprocating blade by adjusting the mutual position of the end rims of the foil blade. A frame that is removable relative to the shaver housing insures an accurate displacement of these end rims.

3,694,917

Patent Not Issued For This Number

3,694,918

METAL-CUTTING APPARATUS

Darrel E. Bailey, 5301 Kaster Dr., and Earl M. King, 1745 Lafayette, both of Bremerton, Wash.

Filed Oct. 20, 1971, Ser. No. 190,766

Int. Cl. B26b *27/00;* **B25d** *17/02*

U.S. Cl. 30—277 **7 Claims**

An apparatus for cutting sheet metal or the like under emergency conditions includes a bar having a pry surface and a cutting blade at one end thereof, and a cylinder reciprocably slidable thereon. In operation, the point of the cutting blade and the pry surface are rested on the sheet metal. The cylinder

is extended, then slid in the direction of the point so as to drive the point through the sheet metal when the cylinder engages a

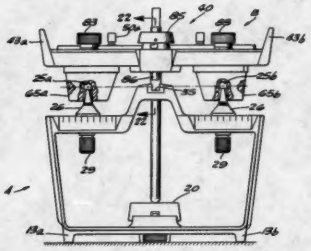
corresponding stop on the bar. Cutting is then accomplished by rocking the bar, using the pry surface as a fulcrum.

3,694,919

DENTAL ARTICULATOR

Robert L. Lee, Colton; Jacob L. Schwartz, Whittier, and Peter P. Klepa, Los Angeles, all of Calif., assignors to Dentonamics Corporation, Inglewood, Calif.

Filed Dec. 2, 1970, Ser. No. 94,443
Int. Cl. A61c *11/00*
U.S. Cl. 32—32 **14 Claims**



A dental articulator including a lower frame, an upper frame, a pair of spherical styluses mounted on the lower frame for providing the condyle parts of simulated temporomandibutlar joints, a pair of analog blocks removably attached to the upper frame for providing the socket parts of the simulated joints, an incisal rest pin on the front end of the upper frame for supporting the upper frame in a selected position of vertical adjustment, and separate means on the two frames for securing their respective dental casts.

For transferring casts into the articulator, there are dimples provided on the laterally outward ends of the analog blocks to indicate the hinge axis, and an alignment device on the upper articulator frame to indicate the plane of the orbital nose point.

For convenient operation of the articulator a centric alignment device is provided having cooperating parts on the upper and lower frames, and also including a releasable lock for the alignment device.

3,694,920

Patent Not Issued For This Number

3,694,921

FLAT DRESS FORM

Ruth Oblander, La Grange Park, Ill., assignor to Sew Fit Co., La Grange Park, Ill.

Filed Aug. 24, 1970, Ser. No. 66,220
Int. Cl. A41h *3/04*
U.S. Cl. 33—17 R **2 Claims**

A method of forming a female flat garment form using a pair of paper sheets, a tape with adhesive on one side and means for securing the paper to the tape on the opposite side, and a plurality of markers formed generally in the same manner as the tape. The markers are first placed on the predominant bulges of the female after which the tapes are secured along the sides and shoulders. The paper sheets, one for the front and one for the back, are attached to the markers on the front and back of the female. The sheets are then fitted to the female by darts, as necessary, after which they are attached to the shoulder and side tapes. Subsequently the paper sheets are trimmed along the lines of attachment to the shoulder and side tapes, either after removal of the sheets, or prior to removal.

3,694,922

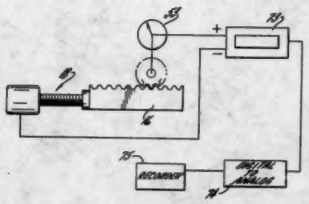
Patent Not Issued For This Number

3,694,923

RACK INSPECTION APPARATUS

Francis E. Heiberger, Elmhurst, Ill., assignor to Danly Machine Corporation

Filed Feb. 27, 1970, Ser. No. 15,163
Int. Cl. G01b *7/28, 7/30, 19/28*
U.S. Cl. 33—179.5 B **5 Claims**



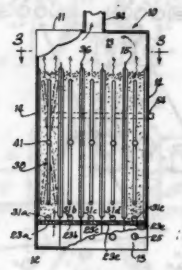
For quality control inspection of a rack-type gear to check for deviations of the rack from specified pitch and gauge, the rack is advanced a measured distance in meshing engagement with a pivotally mounted ultra precision pinion gear cut to the specified pitch. The resultant rotation of the pinion is converted by an encoder to a digital count which, in turn, is compared against the measured distance through which the rack was moved to determine the accuracy or lack of accuracy of the pitch of the rack. A detector senses any pivotal movement of the pinion as the rack is advanced to sense differences in the gauge of the rack along its length.

3,694,924

APPARATUS FOR DRYING PARTICULATE SOLIDS

Herbert Kenneth Staffin, and Robert Staffin, both of Colonia, N.J., assignors to Hercules Incorporated, Wilmington, Del.

Filed Aug. 7, 1970, Ser. No. 61,990
Int. Cl. F26b *3/08*
U.S. Cl. 34—10 7 Claims



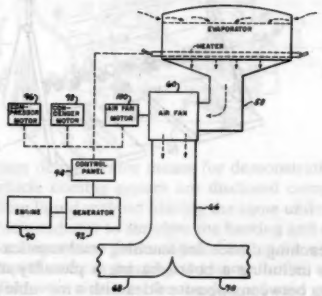
Apparatus for drying particulate solid materials employing a fluidized bed of the material to accomplish drying. Drying is carried out in a chamber having walls defining a confined mass of the particles which is of slab-like configuration to preclude channeling of the fluidizing gas and consequent poor efficiency. Heated agitator means are provided to assist in maintaining the fluidity of the bed notwithstanding the tendency thereof to pack in the presence of moisture.

3,694,925

HUMIDITY CONTROL IN A TEMPERATURE CONTROLLED RAILWAY CAR

Edward L. Coyle; Edgar F. Josephson, and Dennis J. Schipper, all of St. Charles, Mo., assignors to ACF Industries, Incorporated, New York, N.Y.

Filed Sept. 4, 1970, Ser. No. 69,852
Int. Cl. F26b *21/08*
U.S. Cl. 34—46 2 Claims



Thermostatically controlled apparatus for heating or cooling air circulated through a closed railway car is modified so that in a temperature zone near the thermostat setting, where in prior systems the heating or cooling would be stopped, the circulated air is cooled and heated simultaneously to reduce humidity or remove moisture from the air.

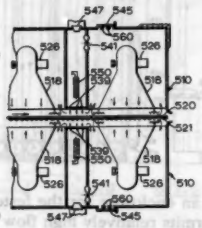
The railway car normally transports fresh fruit or vegetables and the moisture content of the fresh produce may be maintained within a specific range as the air being reintroduced within the car has a moisture content.

3,694,926

SONIC DRYING OF WEBS

Stephen Anthony Rodwin, Montreal, Quebec, and Eustace Cosmo Shuffler, Lachine, Quebec, both of Canada, assignors to Dominion Engineering Works, Limited, Lachine, Quebec, Canada

Filed June 17, 1970, Ser. No. 46,979
Claims priority, application Canada, July 7, 1969, 56,305
Int. Cl. F26b *19/00*
U.S. Cl. 34—69 4 Claims



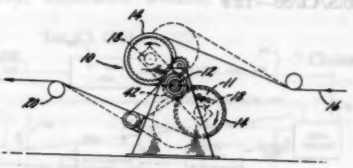
A paper dryer is provided with a sonic drying section through which the web is passed and subjected to high intensity noise from grouped noise generators, usually air operated, to dislocate moisture from the web for enhanced drying rates.

3,694,927

ADHESIVE CURING DEVICE

Wayne P. Sorenson, Appleton, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed Sept. 30, 1970, Ser. No. 76,798
Int. Cl. F26b *13/18*
U.S. Cl. 34—121 1 Claim



A device for controlling the heating and thus the degree of cure of an adhesive on the surface of a web by utilizing two heated, rotatable drums movably mounted on a turret. By rotating the turret, the contact time between the web and the surface of the heated drums is varied thereby altering the heat transferred to, and therefore the cure state of, the adhesive.

3,694,928

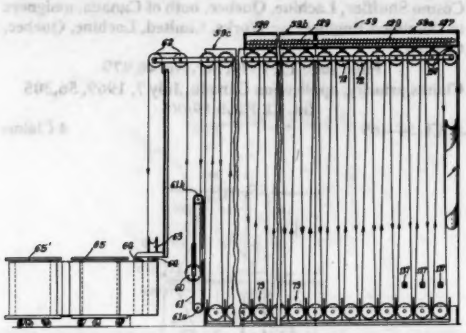
WEB PROCESSING APPARATUS

Franz Barta, Vienna, Austria, and Alfred F. Grupp, Glen Ellyn, Ill., assignors to The Mayercord Co., Carol Stream (Wheaton), Ill.

Filed Aug. 28, 1970, Ser. No. 67,890
Int. Cl. F26b *13/00*
U.S. Cl. 34—159 7 Claims

A web processing apparatus is provided, particularly for drying the printed surface of a continuous web. The web is disposed in festooned relation between upper driving rolls and lower restraining rolls or guides disposed in the depending loops of the festooned web. The restraining rolls or guides have end rim portions which engage and support the web at its marginal edge portions. A plurality of web correction elements, such as toothed annular elements, are provided between the rim portions, and the web is normally held in spaced relation from the web correction elements but is engageable therewith for straightening out collapsed areas or in-

wardly deflected portions of the web as it passes around the restraining rolls or guides. Preferably, a gaseous medium is



passed through an enclosure for the festooned web, and the arrangement permits relatively high flow rates and velocities without disturbing the web.

3,694,929

Patent Not Issued For This Number

3,694,930

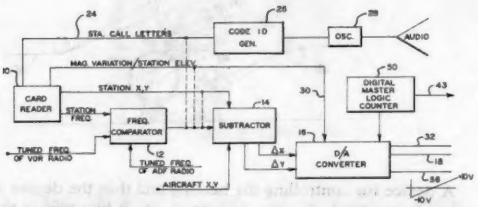
INSTRUMENT DRIVE SIGNALS

Robert W. Howland, Windsor; George E. Minnich, Vestal, and Richard L. Van Fleet, Binghamton, all of N.Y., assignors to The Singer Company, New York, N.Y.

Filed March 27, 1970, Ser. No. 23,378

Int. Cl. G09b *9/08*; B64g *7/00*

U.S. Cl. 35—12 F **4 Claims**



A system providing electrical signals for controlling simulated instruments in fixed-base aircraft trainers. The signals are derived by digital integration of inputs from the flight computer representing variable flight conditions. These are compared with signals from a master logic section and a sample pulse is generated when the signals match. A pair of sample/hold circuits, in response to the sample pulse, respectively sample the instantaneous phase of sine and cosine waves which are represented as DC signals supplied to the two coils of a DC synchro repeater which positions the needle of the simulated instrument.

3,694,931

TRAINING DEVICE FOR TEACHING DIGITAL LOGIC OPERATIONS

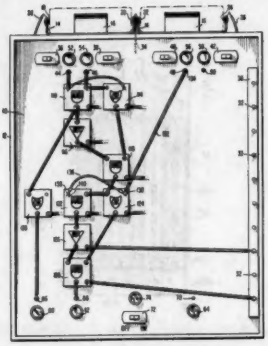
Joseph J. Bialek, 1 Hillside Dr., New York Mills, N.Y.

Filed Jan. 6, 1970, Ser. No. 994

Int. Cl. G09b *23/18*

U.S. Cl. 35—19 A **1 Claim**

A training device for instructing students in digital logic, which includes a desk size panel upon which digital logic operations may be fabricated and visually displayed, a plurality of digital logic circuit devices having means for both mechanical and electrical attachment to the panel, circuit connection means for connecting the digital logic circuit devices to a source of bias voltage supply for energizing the digital logic devices, circuit connection means for providing selected interconnections between the digital logic devices



displayed on the panel, and means for providing input digital values to the interconnected digital logic devices. Both magnetic and plug-type embodiments are disclosed as means for mechanically and electrically attaching the digital logic devices to the panel.

3,694,932

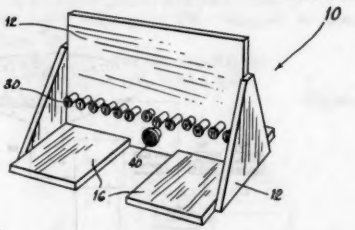
MATHEMATICS TEACHING MACHINE FOR PRIMARY GRADES

Mildred G. McGrath, Chicago, Ill., assignor to McGrath-Hoffman and Associates

Filed June 1, 1971, Ser. No. 148,720

Int. Cl. G09b *19/02*

U.S. Cl. 35—31 B **7 Claims**



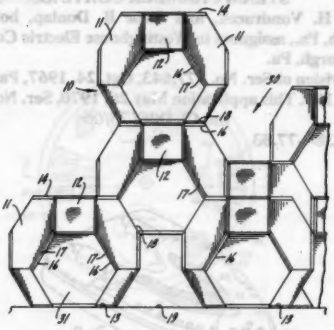
A teaching device for teaching mathematics in the primary grades including a board having a plurality of openings extending between opposite sides with a movable plug in each of the openings. Each plug has a cardinal number on opposite ends thereof and is axially movable between first and second positions, the same number being on both ends of a given plug. In a device for teaching addition and subtraction, the numbers on the plugs are preferably arranged to form a number line that extends consecutively from one side of the device to the other. A chart for each of the plugs is provided on one surface of the board, with the chart having a plurality of groups of numerical values each having a mathematical solution equal to the cardinal number of the associated plug, so that a person facing one surface of the board may perform a problem solving function and a person facing the other surface of the board can perform an answer checking function.

3,694,933

STUDENT LEARNING SPACES

William Larry Busch, Carbondale, Ill., assignor to Avery Coonley School, Inc., Downers Grove, Ill.

Filed May 20, 1970, Ser. No. 39,080
Int. Cl. A47b *41/00*
U.S. Cl. 35—60 9 Claims



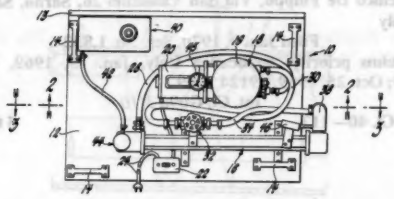
This invention is directed to a system for dividing an otherwise open area into a plurality of individual activity zones by means of a plurality of partially enclosed polyhedron units which are capable of vertical arrangement and, at the same time, are adapted to provide a number of individual activity zones. The partially enclosed polyhedron units can be arranged into a wide variety of self-supporting areas suitable for use by students in undertaking individual learning activities.

3,694,934

DEMONSTRATOR SYSTEM FOR VEHICLE COOLING SYSTEM

Frederic D. Barton, 47736 Ahumanu Loop, Kaneohe, Hawaii

Filed June 9, 1971, Ser. No. 151,313
Int. Cl. G09b *25/02*
U.S. Cl. 35—13 18 Claims



Cooling system demonstrator means for demonstrating the action of a vehicle cooling system are disclosed comprising means for forcing liquid without heating the same under pressure into a vehicle radiator to simulate the heating and expansion of said cooling system from engine heat and means for withdrawing liquid without heating the same under suction from said radiator to simulate the cooling of said cooling system to ambient temperature.

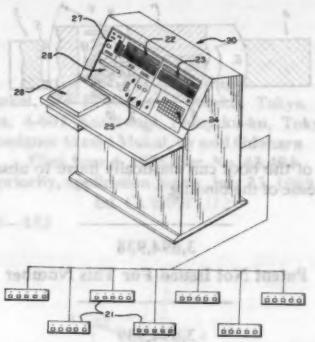
3,694,935

RESPONSE SYSTEM WITH COMMON CIRCUITRY FOR MULTIPLE FUNCTIONS

David Friedman, Framingham, Mass., and Bernard Mortimer Segal, Binghamton, N.Y., assignors to The Singer Company, New York, N.Y.

Filed Aug. 10, 1970, Ser. No. 62,280
Int. Cl. G09b
U.S. Cl. 35—48 R 15 Claims

An improved response and scoring system for use in teaching and testing apparatus which permits reducing the number of wires between a student's responder station and an instructor's console, provides simultaneous correct answer reinforcement on an individual or class basis, allows selective



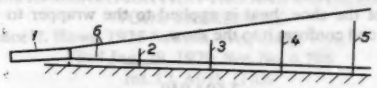
transfer of student response data to the common computational circuitry in a simple manner, and allows selected groups of student responses to be displayed on the instructor's console.

3,694,936

APPARATUS FOR DETERMINING VISIBILITY INCLUDING A PULSED LIGHT SOURCE, A PLURALITY OF SPACED REFLECTORS, AND A DETECTOR

Bernt Ling; Anders Persson, and Olof Svensson, all of Vasteras, Sweden, assignors to Allmanna Svenska Elektriska Atiebolaget, Vasteras, Sweden

Filed Oct. 21, 1971, Ser. No. 191,328
Claims priority, application Sweden, Nov. 16, 1970, 15470/70
Int. Cl. G01n *21/22*
U.S. Cl. 356—208 7 Claims



To determine visibility in varying weather conditions, a light-emitting source is arranged to emit light pulses in the direction of reflectors arranged at known constant distances or with consecutively increasing or decreasing distances between them, the size and reflexibility being unique for each one of them, and a receiving unit of which the amplification can be variable according to the time, is arranged to receive echoes from the reflectors, the number of echoes the amplitude of which exceeds a certain value are registered and counted and the number of echoes actually accepted by the receiver unit constitutes a measurement of visibility.

3,694,937

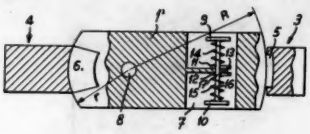
SKI BOOT

Georges Pierre Joseph Salomon, Annecy, France, assignor to S.A. Francois Salomon et Fils, Chemin de la Prairie Prolonge Annecy, Haute-Savoie, France

Filed June 14, 1971, Ser. No. 152,689
Claims priority, application Germany, June 23, 1970, P 20 30 929.2
Int. Cl. A43b *00/00*
U.S. Cl. 36—2.5 AL 10 Claims

The sole of a ski boot comprises a part movably mounted in relation to the rest of the sole and upper of the boot, and elastic means tending to maintain the movable part in a rest

position. The movable part protudes from the upper and forms means for cooperation with a binding device, so that the



remainder of the boot can elastically move to absorb shocks prior to release of the binding.

3,694,938

Patent Not Issued For This Number

3,694,939

METHOD OF COVERING SHOES

Allen Chen, Belleville, Mich., assignor to Lorton Laboratories, Ltd., New York, N.Y.

Filed Oct. 27, 1970, Ser. No. 84,328

Int. Cl. A43b *1/10*; A43d *9/00*

U.S. Cl. 36—7.3 **30 Claims**

A method for covering shoes on the feet of a wearer with a protective sanitary shoe wrapper formed of heat-shrinkable material is disclosed, wherein individual shoe wrappers are positioned at a heat-shrink station in an open configuration to receive and enclose a shoe on the foot of a wearer; after the insertion of the shoe, heat is applied to the wrapper to heat-shrink it and conform it to the show.

3,694,940

INNER SHOE FOR FOOTWEAR

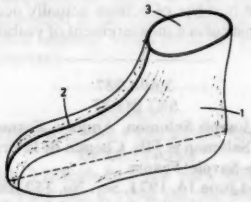
Rudolf Stohr, Tuttlingen/Wurttemberg, Germany, assignor to Dr. Justus Rieker & Co., Tuttlingen/Wurttemberg, Germany

Filed Oct. 20, 1970, Ser. No. 82,306

Claims priority, application Germany, Nov. 15, 1969, G 69 44 404.8

Int. Cl. A43b *3/10*

U.S. Cl. 36—10 **9 Claims**



An inner shoe comprising a non-woven structure based on paper for fitting within footwear such as a ski boot to absorb perspiration. The inner shoe can be formed of one piece only by folding and joining the edges of the folded portions, or from two molded half-shells.

3,694,941

Patent Not Issued For This Number

3,694,942

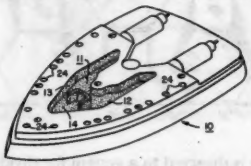
STEAM CHAMBER COATINGS

Charles H. Vondracek, and Anne B. Dunlap, both of Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Division of Ser. No. 677,643, Oct. 24, 1967, Pat. No. 3,551,183. This application May 26, 1970, Ser. No. 40,493

Int. Cl. D06f *75/06*

U.S. Cl. 38—77.83 **7 Claims**



A coating composition containing sodium silicate and hydrated alumina is deposited on a surface of the flash evaporation chamber in a steam ironing device. The coating is heated, most conveniently by application to an already heated surface and preferably heated to at least about 375° F, to convert it to a more insoluble form.

3,694,943

PLURIMILLENARY AUTOMATIC UNIVERSAL CALENDAR HAVING TIME DIVISION REPRODUCING SCALES OF A SLIDABLE TYPE

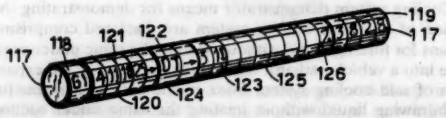
Domenico De Filippo, Via San Valentino 26, Sarno, Salerno, Italy

Filed Jan. 9, 1970, Ser. No. 1,832

Claims priority, application Italy, Jan. 13, 1969, 49101 A/69; Oct. 25, 1969, 49124 A/69

Int. Cl. G09d *3/10*

U.S. Cl. 40—113 **5 Claims**



A plurimillenary universal calendar comprising a support carrying one or more symbol scales for time periods, as well as a plurality of members slidable relative to the support, on each of which are placed one or more scales of other symbols of time periods, wherein each scale comprises subdivisions which are geometrically equal to one another and to those on the other scales, and being the calendar structurally set on the basis of an ideal year beginning on March 1st and ending on February 28th or 29th, on its scale each symbol is spaced apart from the chronologically preceding symbol by as many subdivisions as the week days passing between the beginnings of the two time periods to which said symbols are related.

3,694,944

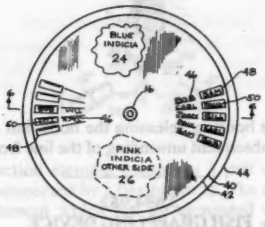
WORD SELECTING DEVICE

Norvell E. Von Behren, 1651 Ardmore Ave., Glendale Heights, Ill.

Continuation-in-part of Ser. No. 718,882, April 14, 1968, Pat. No. 3,553,867. This application Sept. 14, 1970, Ser. No. 71,785

Int. Cl. G09f *11/04*

U.S. Cl. 40—70 R 4 Claims



A baby naming device is disclosed which comprises a plurality of moveable plates mounted together, with the moveable plates having a plurality of indicia designating male names on one side and indicia designating female names on the other side. The frame may contain viewing windows through which the name indicia may be viewed in combination.

3,694,945

OPTICAL ELEMENT FOR ILLUMINATION

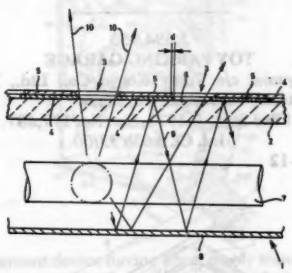
Jakob Detiker, Nuglar, Switzerland

Filed Nov. 5, 1970, Ser. No. 87,282

Claims priority, application Switzerland, Nov. 11, 1969, 16631/69

Int. Cl. G09f *9/38*; B44f *1/00*; F21p *5/00*

U.S. Cl. 40—133 R 15 Claims



The invention provides an optical structural unit for use in lighting, decorating, signalling, advertising and similar purposes which in use incorporates a light source and which can provide differing light effects in the dark when illuminated and in daylight when the light source is not in use. The element consists of a plane or curved plate of a partly transparent material e.g. a plastics material rendered turbid to reduce its transparency. This plate has either on its surface or in its interior a grating or grid of opaque material. At least the surface of the grid which faces the light source is rendered reflecting and the interstices of the grating or grid are such that part of the surface of the plate is exposed to permit light to pass through from the light source, there being at least 10 exposed areas per cm^2 of the plate. The grating or grid may be made of at least two superimposed layers, a lower one which is opaque and an upper one of any desired color. Preferably the lower layer of the grating extends on all sides beyond the colored layer above it.

3,694,946

Patent Not Issued For This Number

3,694,947

PICTURE FRAME

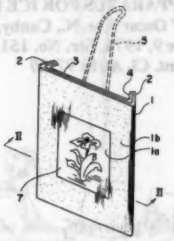
Kazue Mukai, 5-5-11 Ginza, Chuo-ku, Tokyo, and Hisao Odahara, 4-601 Kashiwagi, Shinjuku-ku, Tokyo, both of Japan, assignor to said Mukai, by said Odahara

Filed June 4, 1970, Ser. No. 43,404

Claims priority, application Japan, July 23, 1969, 44/69364

Int. Cl. G09f *1/12*

U.S. Cl. 40—152 3 Claims



This invention relates to a picture frame having an at least partially transparent face plate, with bent edges which resiliently engage a back plate so that a picture to be enjoyed may be held between said face plate and said back plate.

3,694,948

Patent Not Issued For This Number

3,694,949

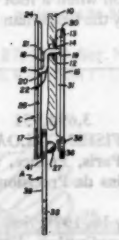
ANIMAL IDENTIFICATION TAG AND INSTALLATION TOOL THEREFORE

Clarence H. Howe, 1925 Newton Ave., Cody, Wyo.

Filed Jan. 29, 1970, Ser. No. 6,705

Int. Cl. A01k *11/00*

U.S. Cl. 40—301 11 Claims



A tag and a tool for installing the same, the tag having a generally flat, elongated blade member with a hole near the lower end which fits onto a forwardly slanted pin upstanding from the cutting end of the tool, which makes a curved slit, with the curve facing upwardly, in an ear or the brisket or flank of the animal. The tool is thrust quickly through the ear, to pull the blade member with it through the slit, then the tool is quickly withdrawn from the same side of the ear. The blade member of the tag and a body member are connected by a flat, S-shaped yoke, with the upper end of both the blade member and the body member spaced above the yoke. The tool has a clamping section beneath which the body member of the tag is placed, to hold the blade member extending rearwardly along

the tool. As the blade member passes through the slit, its upper end will engage the far side of the ear. The tag yoke has an elongated central section and bars connecting with the blade and body members with rounded corners between and the upper bar remaining in the slit. The flat yoke permits quick healing of the slit, while the central section of the yoke and also the upper rounded corner, permit considerable movement of the tag body, without disturbing the yoke bar within the ear. The body of the tag also has, adjacent the lower end, a T-shaped connector for a larger auxiliary tag, which may be marked on both sides, and extends below the ear. The tool has an upstanding post having a slot in which a side of the T-connector may be held, for forcing a hole in the auxiliary tag onto the T-connector.

3,694,950

SLIDING COVER APPARATUS FOR ICE FISHING HOLE

Charles W. Maier, 107 Oscar Ave. N., Canby, Minn.

Filed June 9, 1971, Ser. No. 151,173

Int. Cl. A01k *97/00*

U.S. Cl. 43—4 **6 Claims**

An ice fishing accessory and safety appliance for an ice fishing hole, the apparatus having a stationary frame surrounding the hole and supported in a substantially horizontal plane relative to the ice. A movable cover mounted for sliding movement along a pair of substantially parallel guideways of the frame moves between an open position permitting access to the hole and a closed position obstructing the hole so a captured fish withdrawn from the ice hole cannot re-enter the hole and a fisherman will not accidentally slip through the hole. A pair of tensioned springs connected between movable cover and stationary frame move the cover from an open position to a closed position when a foot pedal actuated latch on the frame is released by the fisherman.

3,694,951

FISHING FLOAT

Robert L. Modeme, Paris, France, assignor to M.E.P.P.S., Manufacture d'Engins de Precision pour Peches Sportives, Paris, France

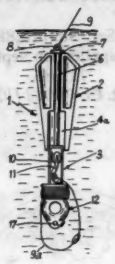
Filed July 16, 1970, Ser. No. 55,397

Claims priority, application France, Aug. 11, 1969, 6926452; Nov. 13, 1969, 6939409

Int. Cl. A01k *93/00, 97/04*

U.S. Cl. 43—41.2 **15 Claims**

The device of float type comprises a first element having in its upper part means for the attachment of the line, and in its lower part an external neck for winding thereon part of the line to be immersed extending beyond the point of attachment, a second element of a density adapted to ensure the buoyancy of the whole and movable relative to the first element between a bottom position in which the two elements confine a closed housing for the reception of the hook, the bait being attached to the hook and eventually separate fish food particles, and a top position in which the said housing is open to the exterior, the whole being such that on contact with the water, the second element is displaced relative to the first



for opening the housing, releasing the hook bait and eventual particles and subsequent unwinding of the line from the neck.

3,694,952

FISH GRAPPLING DEVICE

Edward E. Matthews, P.O. Box 1394, Galveston, Tex.

Filed July 22, 1970, Ser. No. 57,183

Int. Cl. A01k *97/14*

U.S. Cl. 43—5 **10 Claims**

An elongated metal rod member is formed into an eyelet at one end and is provided with a gaff hook at its other end. An intermediate portion of the member is formed into spaced helical coils to slidably receive a fishing line.

3,694,953

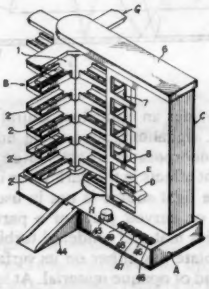
TOY PARKING GARAGE

Eijiro Tomiyama, c/o Tomy Kogyo Co., Ltd., No. 10,9,7-chome, Tatuski, Katsushika-ku, Japan

Filed Sept. 3, 1971, Ser. No. 177,687

Int. Cl. A63h *33/00*

U.S. Cl. 46—12 **9 Claims**



An electrically operated toy parking garage which comprises a rotatable parking tower of a multi-stage structure and an elevator system supported within a housing and including a vertically movable elevator cab, wherein transfer of a toy car to and from the various levels is effected by rotation of the parking tower and by vertical travel of the elevator cab.

3,694,954

CONSTRUCTION ELEMENT FOR THE ASSEMBLY OF MODELS AND THE LIKE

George C. Brumlik, 154 Upper Mountain Ave., Montclair, N.J.

Continuation-in-part of Ser. No. 836,698, June 26, 1969, Pat. No. 3,554,584. This application Jan. 11, 1971, Ser. No. 105,530

Int. Cl. A63h *33/10*

U.S. Cl. 46—29 10 Claims

A construction element comprises a pair of matable segments interconnected by a flexible strap. The segments join to form the element which has an elongated end adapted to receive and mount a tube and a bulbous end. The strap can be positioned to surround a structural member to retain the element in a selected locus with respect to the structural member.

3,694,955

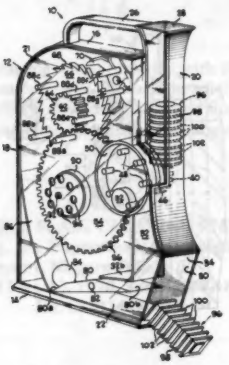
AMUSEMENT DEVICE

Martin I. Glass, Chicago, and Howard J. Morrison, Highland Park, both of Ill., assignors to Marvin Glass & Associates

Filed Aug. 11, 1970, Ser. No. 62,888

Int. Cl. A63h *33/30*

U.S. Cl. 46—39 10 Claims



An amusement device having a preferably transparent housing including an upright chute, and a gear train in the housing including a gear which partially extends into the chute. Plural playing pieces are associated with the device and are of a size and shape to loosely fit within, and slide down, the chute. The playing pieces have a preferably serrated periphery forming a rack for engagement with the toothed periphery of the gear which extends into the chute to initiate movement of the gear train as the playing pieces move through the chute. The bottom of the housing includes a pivoted member which extends partially into the chute for engagement by a descending playing piece and a missile element is associated therewith to the interior of the housing, remote from the chute, so as to be flipped upwardly by a descending playing piece which strikes the pivot element.

3,694,956

Patent Not Issued For This Number

3,694,957

GROWING HAIR DOLL

Lionel Houghton, Kowloon, Hong Kong, assignor to Mego International, Inc., New York, N.Y.

Filed Sept. 2, 1971, Ser. No. 177,344

Int. Cl. A63h *3/44*

U.S. Cl. 46—135 7 Claims

In a doll or the like, improved structure is provided for simulating growth of the normal complement of the doll's hair. An extra bundle of hair is passed through a hole in the top of the doll's head and the inner end of the bundle is secured, by means of a resilient anchor, internally of the doll. Pushbutton means are provided for normally preventing the bundle of hair from being pulled outwardly. Thus, only when the pushbutton is depressed can the hair be withdrawn. The pushbutton means, when released, will stop both the inward and outward movement of the bundle of hair and will retain the bundle of hair in the selected position in order to simulate various different stages of "growth" of the remainder of the hair. The resilient anchor for the bundle of hair may be encased in a flexible plastic due on which the pushbutton means acts directly or, alternatively, the pushbutton may act on the bundle of hair itself.

3,694,958

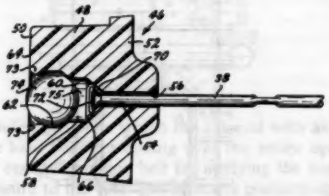
WHEEL AND AXLE ASSEMBLY HAVING AN ENTRAPPED THRUST BEARING

John C. Parker, Los Angeles, and Keith M. Johnson, South Laguna, both of Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed Nov. 27, 1970, Ser. No. 93,348

Int. Cl. A63h *17/26*

U.S. Cl. 46—201 9 Claims



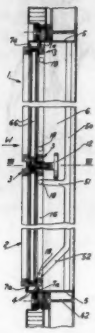
An improved low-friction carriage for a toy vehicle where the wheels are each of one-piece construction including an axle bearing surface and a precisely concentric outer running surface. The wheel is retained by blunting the end portion of the corresponding axle and press fitting a steel ball in another opening of the wheel to act as a thrust bearing. Not only is friction reduced, but the axle, the wheel and the steel ball are economical elements which are easily and inexpensively assembled.

3,694,959

METAL SLIDING WINDOW

Karl Gartner, Gundelfingen/Danuhe, Germany, assignor to Joseph Gartner & Co., Gundelfingen/Danube, Germany

Filed July 23, 1970, Ser. No. 57,632
Claims priority, application Germany, July 26, 1969, P 19 38 021.3
Int. Cl. E05d *15/20*
U.S. Cl. 49—128 12 Claims



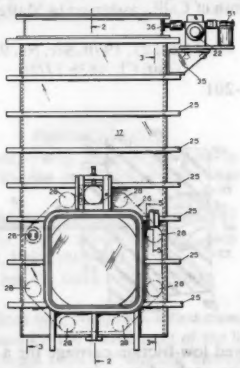
A metal sliding window having a plurality of relatively movable sash means positioned in a common plane when in a closed position and in parallel planes when in an opened position. The sash means each include a frame composed of identical integrally formed profiled frame parts U-shaped in cross section and adapted to receive window panel means between the parallel flanges of the frame parts. Each of the frame parts also has at least one rib extending outwardly from the base part thereof and cooperates with the stop flanges on the guide profiles and the centering flanges on the centering profiles. Grooves are provided in the guide profiles and receive rollers secured to the sash means to permit said relative movement between the sash means.

3,694,960

DOOR ASSEMBLY AND CHAMBER COMBINATION

Peter Thomas Miraldi, Erie, Pa., assignor to American Sterilizer Company, Erie, Pa.

Filed Aug. 18, 1970, Ser. No. 64,776
Int. Cl. E05d *15/10*
U.S. Cl. 49—209 7 Claims



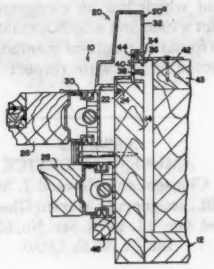
The specification discloses a door assembly and chamber combination. The door is disposed in a door chamber at the front of the sterilizing chamber and a lifting mechanism is provided for the door. A clamping mechanism is provided for clamping the door to a seal around an opening to the chamber. The door chamber is made up of a front plate and a rear plate, each of which have an opening aligned with the other and the door slides between these openings and is forced into engagement with a rearwardly facing seal attached to the front plate. A clamping arrangement made of plungers spaced around the opening and fixed to the back plate provided with chains and sprockets driven by an electric motor which forces the plungers into engagement with the door and causes it to seal against the seal. The door is counterweighted and a lifting motor is provided to lift the door out of the space between the two openings.

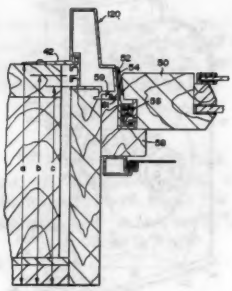
3,694,961

MODULAR WINDOW UNIT

Waldo O. Johnson, 1419 Beall Ave., Wooster, Ohio, assignor to Georgia-Pacific Corporation, Portland, Oreg.

Filed April 7, 1970, Ser. No. 26,240
Int. Cl. E06b *1/20*
U.S. Cl. 49—414 9 Claims





A modular window or window frame unit is provided from a wooden frame including a pair of jambs, a sill and a header, a window is operatively positioned in the frame, and a plurality of metal frame extenders operatively engage each section of the wood frame on the outer surface thereof, are of the same sectional shape, and are in interlocking engagement with one of the frame members.

3,694,962

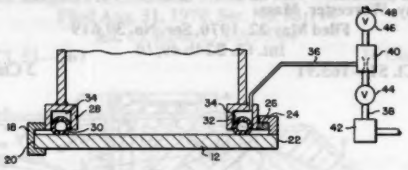
SLIDING DOOR STERILIZER WITH POWER ACTUATED SEAL

Robert L. McDonald, Rochester, and Edgar L. Anderson, Penfield, both of N.Y., assignors to Sybron Corporation, Rochester, N.Y.

Filed April 27, 1970, Ser. No. 32,284
Int. Cl. E06b *7/16*
U.S. Cl. 49—477 2 Claims

Disclosed is a sliding door sterilizer having a power operated seal means for sealing between the door closure and

the sterilizer opening. The seat for the seal means is pressurized to move the seal against the door and the seat is evacu-



ated to create a partial vacuum for drawing the seal away from the door closure.

3,694,963

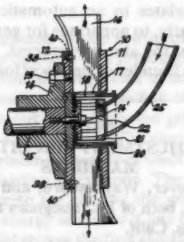
CENTRIFUGAL BLASTING WHEEL

Raymond M. Leliaert, South Bend, Ind., assignor to Wheelabrator-Frye, Inc., Mishawaka, Ind.

Filed March 25, 1970, Ser. No. 24,047

Int. Cl. B24c *3/00*

U.S. Cl. 51—9 **14 Claims**



A centrifugal blasting wheel provided with throwing blades whose throwing surfaces are flat and parallel to the axis of rotation of the wheel at their inner ends and slope gradually so that their outer ends lie in a plane at an angle to the axis of rotation.

3,694,964

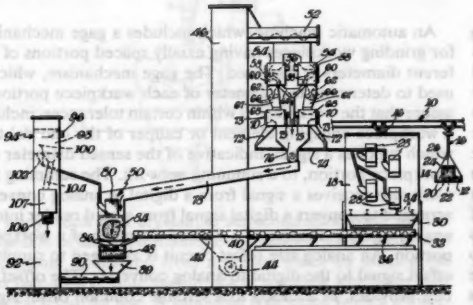
ABRASIVE BLAST CLEANING SYSTEM

Joseph E. Bowling, Jr., Waynesboro, Pa., assignor to The Carborundum Company, Niagara Falls, N.Y.

Filed Nov. 13, 1970, Ser. No. 89,181

Int. Cl. B24c *3/08*

U.S. Cl. 51—9 **7 Claims**



An abrasive blast cleaning system includes a pair of separators for separating sand from abrasive particles in conjunction with a no-bake molding procedure with crushing rollers being provided between the separators to crush small lumps of pea size sand.

3,694,965

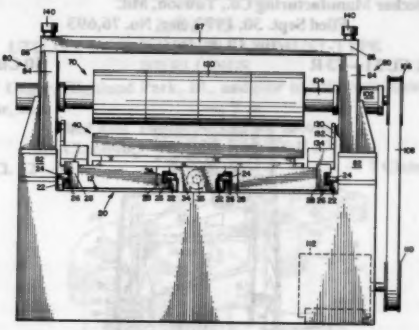
GRINDING OR POLISHING OR GLAZING MACHINE

John P. McLeod, 21 School St., Hatfield, Mass.

Filed March 18, 1970, Ser. No. 20,566

Int. Cl. B24b *3/00, 5/00*

U.S. Cl. 51—93 **4 Claims**



Apparatus for grinding or polishing or glazing or otherwise finishing flat or contoured-in-one dimension surfaces of a work as the work is held on a work table reciprocated rectilinearly along a horizontal plane in front-rear and end-end directions with reference to a tool mechanism in the form of a driven rotatable grinding or polishing or glazing wheel having a peripheral face providing the grinding or polishing or glazing action, with cooperant means for reciprocating the work table in the forward and rearward directions and simultaneously therewith in the end to end directions, and other means for simultaneously driving the tool mechanism vertically to bring the tool into and remove the tool out of working position with respect to work.

3,694,966

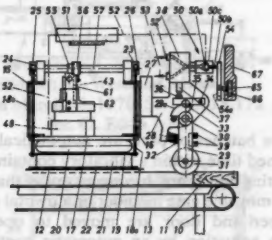
BELT GRINDING MACHINE

Karl Heesemann, 54, Friedenstrasse, Rehme via Bad Oeynhausen, Germany

Continuation of Ser. No. 684,867, Nov. 21, 1967, abandoned. This application Nov. 6, 1970, Ser. No. 87,655

Int. Cl. B24b *21/08*

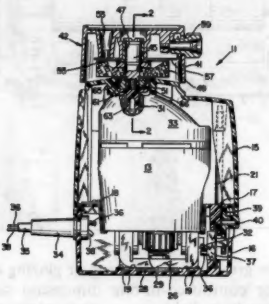
U.S. Cl. 51—138 **13 Claims**



A belt grinding machine which is equipped with an elastically flexible load beam extending over the entire operative length of an endless grinding belt for applying the necessary grinding pressure to the belt. The effective pressure-applying surface of said beam is suspended for elevational control from support elements distributed at intervals along the length of the beam, and attached to an elevationally movable carrier preferably in the form of transverse beams mounted on push rods operable by a pressure medium. The push rods are associated with constant delay mechanism adjustable to the difference in time between the instant of response of a sensing element to the passage of the leading end of a workpiece and the instant the grinding action begins, on the one hand, and between the instant of response of a sensing element to the

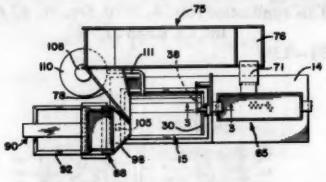
passage of the trailing end of the workpiece and the instant the grinding action terminates, on the other hand.

3,694,967
DOUBLE INSULATED DRILL BIT SHARPENER
Henry J. Stielper, Baltimore, Md., assignor to The Black and Decker Manufacturing Co., Towson, Md.
Filed Sept. 30, 1970, Ser. No. 76,693
Int. Cl. B24b *3/26*
U.S. Cl. 51—73 R 10 Claims



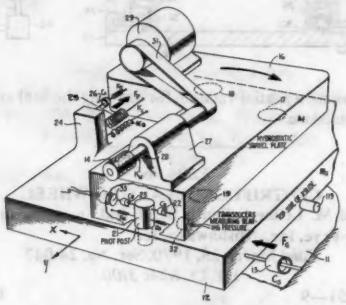
A double insulated drill bit sharpener including an electric motor supported within a casing and including an output rotary shaft. A sharpening head is fixed to the casing and includes a sharpening wheel fixed to a rotatable spindle coupled to the motor driven shaft.

3,694,968
VIBRATORY APPARATUS
Max Isaacson, and Benjamin Smilg, both of Dayton, Ohio, assignors to Vibrodyne, Inc., Dayton, Ohio
Filed Jan. 2, 1970, Ser. No. 53
Int. Cl. B24b *31/06*
U.S. Cl. 51—163 10 Claims



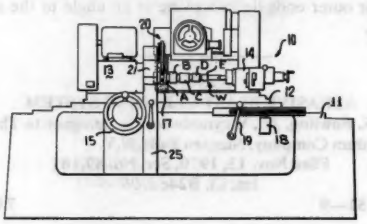
Successive batches of parts are automatically treated for a predetermined time within a vibratory container supporting a load of treating media and having an outlet that is opened and closed by a movable gate member or a pivotal door. When the gate member and door are moved to open positions in response to actuation by an automatic control system, the parts and media flow by vibration of the container onto a vibratory screen where the parts and media are separated. The media is immediately recirculated to the container by an endless conveyor to aid in discharging the treated batch of parts and media from the container. The gate member is moved into the recirculating media within the container to block the outlet, and after the outlet is clear of media, the door closes. The amplitude of vibration of the container is regulated by a sensing device connected to the container, and controls are provided for presetting the amplitude for different conditions of operation during cycling of the system. Batches of parts are successively supplied to the container from a weighing device including a parts hopper having a door actuated by the control system.

3,694,969
AUTOMATIC GRINDING MACHINE
Robert S. Hahn, Northboro, and Richard P. Lindsay, Marlboro, both of Mass., assignors to The Heald Machine Company, Worcester, Mass.
Filed May 22, 1970, Ser. No. 39,619
Int. Cl. B24b *49/16*
U.S. Cl. 51—165.91 3 Claims



This invention relates to an automatic grinding machine and, more particularly, to apparatus for generating surfaces of revolution by use of the abrasive process, wherein the operation of the machine is under closed loop force control.

3,694,970
OFFSET SIZE ADJUSTMENT CIRCUIT FOR GRINDING MACHINES
Stanley C. Schoonover, Waynesboro, and Lester R. Luckenbach, Mont Alto, both of Pa., assignors to Litton Industries, Inc., Beverly Hills, Calif.
Filed Sept. 18, 1970, Ser. No. 73,331
Int. Cl. B24b *49/06*
U.S. Cl. 51—165.71 21 Claims



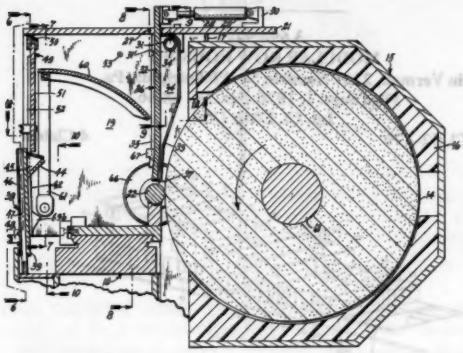
An automatic machine, which includes a gage mechanism, for grinding workpieces having axially spaced portions of different diameters is disclosed. The gage mechanism, which is used to determine the diameter of each workpiece portion to assure that the workpiece is within certain tolerances, includes a workpiece engaging element or caliper of the chordal type which supplies a signal, indicative of the sensed diameter of a workpiece portion, to a summing network. The summing network also receives a signal from a digital to analog converter arranged to convert a digital signal from a card reader into an analog signal indicative of a desired diameter of a workpiece portion. An analog size offset circuit is arranged to supply an offset signal to the digital to analog converter. The offset circuit provides, in addition to a settable common offset signal, an additional programmed offset signal which is derived from a second analog to digital converter supplied with digital signals from thumbwheel switches which receive enabling signals from a program sequence controller. The controller also supplies enabling signals to the card reader associated with the first-mentioned digital to analog converter.

3,694,971

GUARD SYSTEM FOR HIGH SPEED GRINDER

Howard W. Renner, and John A. Moores, both of Cincinnati, Ohio, assignors to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed Aug. 31, 1970, Ser. No. 68,114
Int. Cl. B24b *55/02, 55/04*
U.S. Cl. 51—267 **16 Claims**



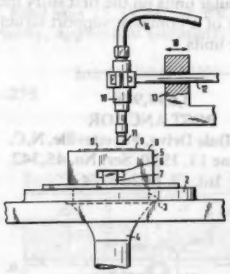
A first shield is disposed above a workpiece and adjacent thereto to protect the operator of a grinding machine during a grinding operation from any fragments of an exploding grinding wheel. During loading and unloading of the workpieces, the first shield is pivoted away from the grinding position of the workpiece, and a second shield is disposed between the workpiece and the grinding wheel to protect the operator during loading and unloading operations. The first shield has a coolant supplied thereto for cooling the grinding wheel; this coolant serves as an energy absorber if any fragment of an exploding grinding wheel strikes the first shield.

3,694,972

METHOD AND APPARATUS FOR SUBDIVIDING A CRYSTAL WAFER

Reimer Emeis, Ebermannstadt, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed June 26, 1970, Ser. No. 50,181
Int. Cl. B24b *1/00;* **B24c** *1/00*
U.S. Cl. 51—319 **2 Claims**



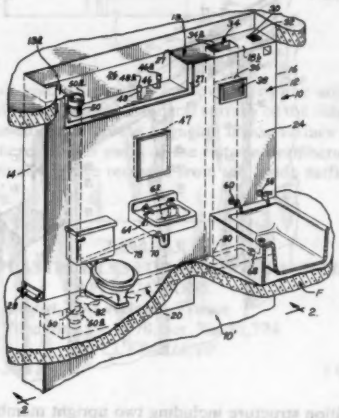
A body, such as a crystalline semiconductor body for the production of diodes, transistors, thyristors or other electronic components, is severed from a crystal wafer by placing the wafer face-to-face onto the surface of a griddle which has a slit along each cutting line. A sandblast is directed from a jet nozzle upon the top face of the wafer above the slit, and relative movement is imparted between griddle and jet nozzle in a direction lengthwise of the slit, simultaneously exhausting the sand out of the slit. In this manner, the crystal body is separated from the rest of the wafer along the slit. Preferably, the device for performing the method is provided with a griddle whose top surface has a group of parallel slits extending crosswise to another group of parallel slits, a comb structure, also with intersecting slits, being mounted above the griddle surface proper. Such apparatus is capable of simultaneously severing a multiplicity of individual bodies from a crystal wafer.

3,694,973

UTILITY MODULE FOR APARTMENT-TYPE DWELLINGS

David Unger, Highland Park, Ill., assignor to Midweco-Enterprise, Inc.

Filed Aug. 14, 1970, Ser. No. 63,680
Int. Cl. E04b *5/48;* **E04c** *1/39;* **E04f** *17/08*
U.S. Cl. 52—34 **7 Claims**



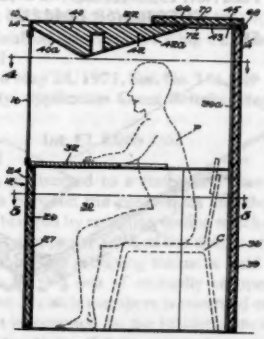
A utilities-containing structural module for high-rise apartments is provided in which a precast concrete block is used to provide an insulated structural wall between the bathroom and kitchen of the apartment. Spaced risers are embedded in the concrete block for effecting continuous utilities communication between vertically arranged blocks, and the upper edge of each block defines a recess which is used as an access where connection may be made between the risers of vertically aligned modules. Laterally and transversely extending conduits are also embedded in the concrete block for operative connection to various room fixtures.

3,694,974

AUDIOMETRIC SURVEY BOOTH

Alan Eckel, 10 Hildreth St., Westford, Mass.

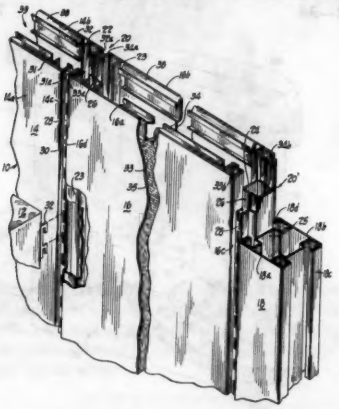
Filed March 10, 1970, Ser. No. 18,172
Int. Cl. E04b *1/82*
U.S. Cl. 52—36 **7 Claims**



An audiometric survey booth to conduct basic hearing tests is padded interiorly with sound absorbing material at the top

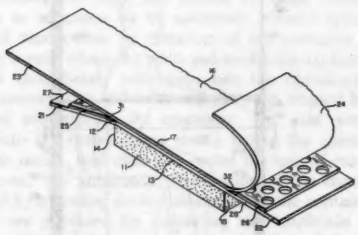
and sides to shut out exterior noises. At the top, portions of said material extend diagonally downward and thence diagonally upward while the material at opposite sides is non-parallel, flaring inwardly from the top in a downward direction, being so arranged that the ears of a person within my booth are particularly well shielded from outside noises.

3,694,975
PARTITION STRUCTURE
Gordon J. Pollock, Parma Heights, Ohio, assignor to The Mills Company, Cleveland, Ohio
Filed July 27, 1970, Ser. No. 58,601
Int. Cl. A47b *5/00*
U.S. Cl. 52—36 **7 Claims**



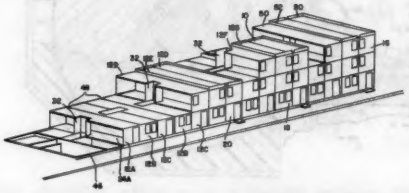
Partition structure including two upright members secured together along adjacent vertical edges. A narrow member forms a part of a juncture between said upright members and extends between the vertical edges thereof, recessed from opposite faces that form major surfaces of the partition structure. The narrow member includes two inwardly facing channel portions, each having a flat vertical wall portion parallel with the major surfaces of the partition structure and extending between vertical edges of the upright members. A plurality of vertically aligned apertures extend through one or both of said vertical wall portions of the narrow member to receive support brackets, mounting clips, or the like for securing shelving, cabinets, panels, or the like, to the partition structure.

3,694,976
EXPANSION JOINT COVERING
Stanley W. Warshaw, c/o Technical Coatings, Inc., 295 Reservoir St., Needham Heights, Mass.
Filed Nov. 13, 1970, Ser. No. 89,251
Int. Cl. E04b *1/68;* **E04d** *3/38*
U.S. Cl. 52—58 **10 Claims**



An expansion joint cover includes an insulating cushion to be laid over a gap in a structure to be sealed. An intermediate flexible strip is sandwiched between the cushion and an outer flexible strip, both strips extending beyond the cushion. First and second rigid strips are attached to that side of the intermediate strip facing the outer strip adjacent to the edge of the cushion. Preferably, these rigid strips are perforated to help relieve shear strain when structure on opposite sides of the joint tends to shift along the length of the joint, and thermal stresses from ambient temperature changes.

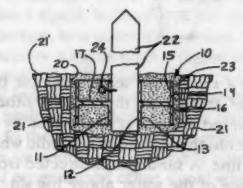
3,694,977
MODULAR ROW HOUSING
Marvin Verman, 2137 Naudain St., Philadelphia, Pa.
Filed Sept. 1, 1970, Ser. No. 68,667
Int. Cl. E04b *1/04*
U.S. Cl. 52—79 **4 Claims**



Modular row housing used to construct row housing units of one story or more comprising a plurality of modular units, each having a height of one story and a width corresponding to one-half of the finished width of the row housing unit, each modular unit comprising a party wall along its length, front and rear walls, a floor and a ceiling with the front and rear walls having a width corresponding to one-half of the finished width, each modular unit having an opening at the face opposite to the party wall, said opening being defined by free edges, two of said modular units being assembled together to form a single story with the free edges of each modular unit being held together in abuttment by a sealing material to close off the opening of each modular unit, thereby to provide the first story or a subsequent story of the row housing unit.

In the preferred embodiment there is at least a second story that is comprised of two modular units similar to those comprising the first story, with the second story modular units being positioned on the corresponding first story modular units and a compressible sealing material is interposed between the second story modular units and the first story modular units in order uniformly to distribute the weight to the second story modular units on the first story modular units without the necessity of a common support structure for the second story modular units.

3,694,978
POST ANCHOR
Maxie R. Mintz, 543 Dale Drive, Fayetteville, N.C.
Filed June 11, 1970, Ser. No. 45,342
Int. Cl. E02d *5/74*
U.S. Cl. 52—166 **2 Claims**



In abstract, a preferred embodiment of this invention is a post anchor in the form of spaced, concentrically disposed, interconnected cylindrical bearing surfaces forming a sturdy reinforcing anchor for elongated post-like members.

3,694,979

SKIRTING FOR MOBILE HOMES

Marlynn D. Vadnie, Rte. 1, Paynesville, Minn.

Filed Nov. 12, 1970, Ser. No. 88,584
Int. Cl. E06b 9/00; E02d 27/00
U.S. Cl. 52—169 4 Claims

Skirting for enclosing the space under mobile homes and similar elevated structures for aesthetic and insulating purposes. The skirting comprises a plurality of segments arrayed end-to-end and suspended from a track mounted on the underside of the edge of the structure. Each skirting segment includes an upper flat panel and a vertically adjustable lower panel telescopically mounted in a pair of vertical channels at the ends of the upper panel. Adjacent segments are joined by engagement in back-to-back channels in a vertical connecting strip. Corners are finished off by segments of appropriate contour constructed in the same general manner as the flat panels.

3,694,980

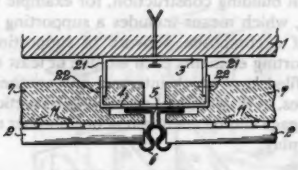
Patent Not Issued For This Number

3,694,981

MEANS FOR ATTACHING SLABS AND TILES ON BUILDING STRUCTURES

Gottfried Cremer, Junkersdorf, and Joachim Kraus, Amberg, both of Germany, assignors to Fetok GmbH, Chur, Switzerland

Filed May 27, 1970, Ser. No. 40,928
Claims priority, application Germany, May 28, 1969, P 19 27 195.5
Int. Cl. E04f 13/08
U.S. Cl. 52—235 2 Claims



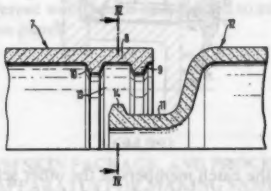
A method for attaching slabs or tiles of ceramic material on a building structure in which on lines on the building structure which are to be overlain by adjacent edges of tiles or slabs anchoring strips are attached which are of T-section. These anchoring strips have jaws or cheek pieces adapted to receive holding strips, also of T-section, which when fitted in the anchoring strips overlap adjacent edges of the tiles or slabs and hold them in place.

3,694,982

RIDGE TILE

Max Gerhaher, Stadtgraben 21, 844 Straubing, Germany

Filed Sept. 22, 1970, Ser. No. 74,294
Claims priority, application Germany, Sept. 30, 1969, P 19 49 35.1; Nov. 6, 1969, P 19 55 924.1
Int. Cl. E04d 1/30
U.S. Cl. 52—302 12 Claims



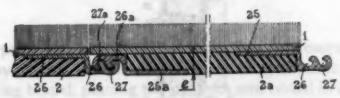
At its small end, which is to be covered by the adjacent ridge tile, only parts of the peripheral surface of the ridge tile are dimensioned to match the engaging inside surface of its other end whereas other parts of the outside peripheral surface of the small end are recessed from the inside surface of the other end.

3,694,983

PILE OR PLASTIC TILES FOR FLOORING AND LIKE APPLICATIONS

Pierre Jean Couquet, 09-Levelanet, France

Filed May 19, 1970, Ser. No. 38,774
Int. Cl. E04f 15/10
U.S. Cl. 52—384 1 Claim



Tiles adapted to constitute by juxtaposition a continuous, plain or diversified carpet or revetment of textile, plastic or other material, characterized in that each tile is secured to a backing of same dimensions but projecting along two adjacent edges of the tile to form an embedded strip provided with means permitting the mutual engagement of fastening means provided in embedded condition under the edges of two sides of the adjacent tile, said fastening means having a thickness inferior to that of said backing so that in the assembled condition no extra thickness is produced in relation to the normal backing thickness.

3,694,984

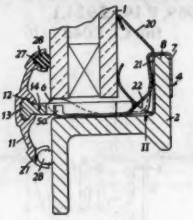
MOUNTING OF SEALED DOUBLE GLAZING UNITS

Bernard Paul Manfred Schwartz, 84 King Charles Road, Surbiton, England

Filed May 24, 1971, Ser. No. 146,289
Claims priority, application Great Britain, May 27, 1970, 25,579/70
Int. Cl. E06b 3/62
U.S. Cl. 52—398 10 Claims

The invention is directed to a frame and panel assembly. There are spaces between the panel sides and the frame and these spaces are bridged by retaining means which engages the panel and frame on opposite sides of the spaces and holds the panel to the frame. The retaining means is held against the panel and frame by two sets of mutually co-operable catch members. One set of catch members is mounted on the frame and the other set is mounted on the retaining means, and the respective catch members of the two sets co-operate together in the spaces between the panel and frame. When brought into

mutual co-operation, the respective catch members of the two sets are held together by virtue of the catch members of one set having a pair of projections which are located on opposite sides of a guide portion and which will be urged to enter a pair



of apertures of the catch members of the other set. The apertures are located on opposite sides of a slot for receiving the respectice guide portion so that the projections and apertures will be guided towards each other when the two sets of catch members are brought into mutual co-operation.

3,694,985

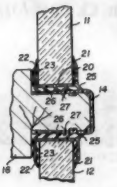
WINDOW GLASS GLAZING SYSTEM

Albert E. Spaiches, Webster, N.Y., assignor to Schlegel Manufacturing Company, Rochester, N.Y.

Filed Oct. 23, 1970, Ser. No. 82,934

Int. Cl. E04b *1/62*

U.S. Cl. 52—400 **8 Claims**



A channel-shaped retainer strip is secured to the edge of a window glass to retain the glass in a plastic frame and form a seal between the glass and the frame. The bodies of the frame and the retainer strip are formed of relatively strong and hard plastic, and the retainer strip has relatively soft plastic seal fins engaging the outside of the glass and the frame to seal the glass in the frame. Confronting surfaces between the frame and the retainer strip are formed with interlocking projections of soft plastic material that allow the glass to be pressed into the frame and resist movement of the glass back out of the frame to retain the glass in place.

3,694,986

HEAT INSULATING WALL CONSTRUCTION FOR A LOW TEMPERATURE LIQUEFIED GAS TANK OF THE MEMBRANE TYPE

Katsuro Yamamoto, Tokyo; Kuniyoshi Obata, Kawasaki, and Toru Sata, Kamakura, all of Japan, assignors to Bridgestone Liquefied Gas Company, Ltd., Tokyo, Japan

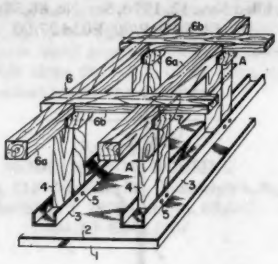
Filed Aug. 18, 1970, Ser. No. 64,671

Claims priority, application Japan, Sept. 9, 1969, 44/71150

Int. Cl. E04b *1/76*

U.S. Cl. 52—404 **2 Claims**

A heat insulating wall construction for a membrane type low temperature liquefied gas tank includes a plurality of support members extending in parallel with each other between the inner membranous vessel and the outer rigid vessel. A laminated wood plate is fixed on the inner ends of the support members. Heat insulating material is charged in the space formed among the support members between the laminated wood plate and the outer rigid vessel. The laminated wood plate is composed of inner and outer layers with the joints of



the respective layers positioned out of alignment with each other. All the components in the wall construction are bound together by means of adhesives and nails.

3,694,987

SURFACE SUPPORTING ASSEMBLY WITH A SUPPORTING NETWORK

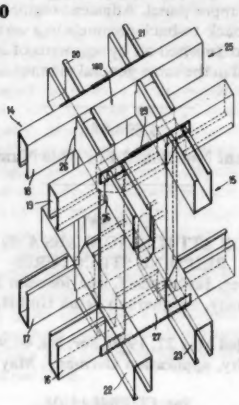
Aldo Henggeler, Matthofring 17,, Luzern; Oskar Furter, Villa Landenberg, Sarnen; Roland Crottaz, Hergiswil am See, and Hans Seghizzi, Meggen, all of Switzerland, assignors to said Henggeler and Furter, by said Crottaz and Seghizzi

Filed March 17, 1970, Ser. No. 20,197

Claims priority, application Switzerland, March 20, 1969, 4213/69

Int. Cl. E04b *5/14*

U.S. Cl. 52—650 **7 Claims**



The invention is concerned with means for supporting surfaces used in building construction, for example for supporting ceilings, which means includes a supporting assembly in the form of a composite network of supporting elements. These supporting elements each include at least two parallel, spaced profiled bars which intersect one another and which have recesses, at their mutual points of intersection, by which they can engage and be anchored in one another so as to form a rigid assembly.

3,694,988

SPACER CLIP FOR JOINING AND SUPPORTING CROSSWISELY EXTENDING REINFORCEMENT BARS

Mats Folke Skold, Backvagen 78, Hagersten, Sweden

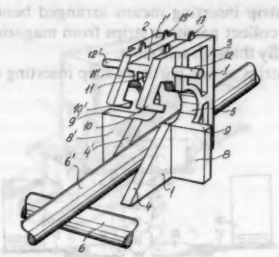
Filed Jan. 19, 1970, Ser. No. 3,765

Int. Cl. E04c *5/20*

U.S. Cl. 52—678 **4 Claims**

Spacer clip for joining crosswisely extending reinforcement bars at their intersections in preparation for casting concrete

slabs and the like and supporting them in an elevated position spaced from the casting mold and which has a generally U-



shaped body comprising arcuate recesses for receiving and resiliently retaining reinforcement bars of various sizes.

3,694,989

SUPPORT SPACERS FOR CONCRETE REINFORCEMENT RODS

Keith W. Oliver, Hadfield, and Donald Taylor, Stalybridge, both of England, assignors to Celmac Plasclip Limited, Godley, Hyde, England

Filed Jan. 5, 1970, Ser. No. 555

Claims priority, application Great Britain, Jan. 16, 1969, 2,611/69

Int. Cl. E04c *5/20*

U.S. Cl. 52—678 **6 Claims**

A spacer for concrete reinforcement rods of a plastics material comprising a U shaped support member having teeth on the legs of the member for engagement by teeth on a locking member to secure the reinforcement rod in position between the legs.

3,694,990

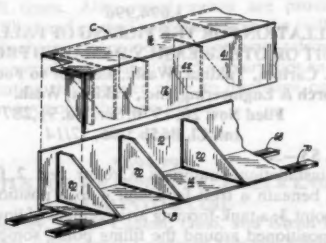
WELDED BOX-TYPE STRUCTURAL MEMBER

Karl A. Pamer, Chagrin Falls, Ohio, assignor to McNeil Corporation, Akron, Ohio

Filed June 9, 1970, Ser. No. 44,773

Int. Cl. E04c *3/30*

U.S. Cl. 52—731 **7 Claims**



A welded box article, such as, a girder, column, beam, etc., comprising top, bottom, web and diaphragm or reinforcing plates connected by "flat" welds, that is, by welds formed on the top side of a flat or horizontally positioned member and a method of constructing such an article by welding diaphragm plates to top and bottom plates with the top plate inverted and both plates flat; subsequently positioning the subassemblies thus formed on separate flat web plates with one edge of the diaphragm plates resting on the web plates and welding the diaphragm plates to the web plates to form girder sections; thereafter assembling the two sections with two of the plates extending vertically and welding the adjoining flat edges; rotating the assembly thus formed 180° about its longitudinal axis, and welding the adjoining flat edges. In an alternative method a different web plate is first welded to each of the flat top and bottom plates.

3,694,991

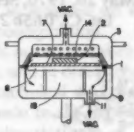
VACUUM SKIN PACKAGE, AND PROCESS AND APPARATUS FOR MAKING SAME

Richard R. Perdue, Greer; Le Roy F. Hoagland, and Richard O. Kuehne, both of Greenville, all of S.C., assignors to W. R. Grace & Co., Duncan, S.C.

Filed Oct. 23, 1970, Ser. No. 83,398

Int. Cl. B65b *31/02*

U.S. Cl. 53—22 A **8 Claims**



In the prior art, vacuum skin packaging processes are performed by placing the product to be packaged on an impervious backing board; placing the product and board in a vacuum chamber; positioning a sheet of thermoplastic film above the product and backing board in the chamber; evacuating the chamber; then, either pulling the film down over the product or pushing the product up into the film; and, thereafter sealing the film to the board. In the present invention, a portion of the film is drawn by differential air pressure against the concave interior surface of the upper portion of a vacuum chamber; the film is then heated by surface contact; and then, after evacuation of the chamber, air pressure is used to blow the film down over the product and against the backing board. Thus, in the present invention, the film is shaped in a concave fashion surrounding the upper portion of the product and it is not necessary for the product to move. The height of the chamber may be adjusted for different products so that excess film is not used and wrinkling is prevented.

3,694,992

PACKAGING COMPRESSIBLE MATERIAL

Johnnie B. Hunt, Stuttgart, Ark., assignor to J. B. Hunt Company, Stuttgart, Ark.

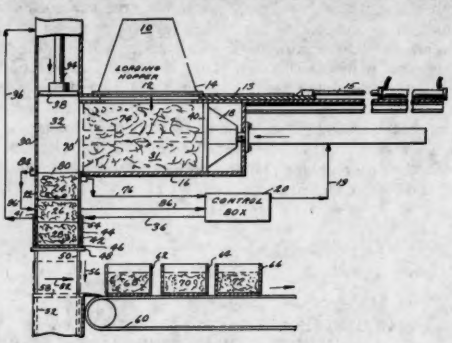
Continuation of Ser. No. 24,052, March 24, 1970, abandoned, which is a division of Ser. No. 592,403, Nov. 7, 1966, Pat. No. 3,501,890. This application July 28, 1971, Ser. No. 167,051

Int. Cl. B65b *1/24, 63/02*

U.S. Cl. 53—24 **11 Claims**

Apparatus and method are disclosed by which a compressible and expandable material such as rice hulls may be packaged. The apparatus includes hydraulic press means for

successively compressing and packing increments of compressed rice hulls into a container or bag without releasing ex-



panding pressure therein which would otherwise rupture the bag or container in the packing operation.

3,694,993

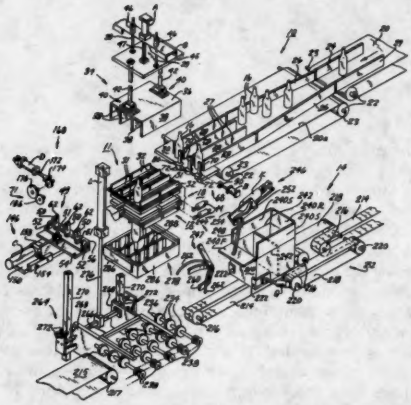
AUTOMATIC BOTTLE PACKING METHOD AND APPARATUS

Jerry L. East, Lynchburg, Va., assignor to Simplimatic Engineering Co., Lynchburg, Va.

Filed May 20, 1970, Ser. No. 38,974

Int. Cl. B65b *21/06*

U.S. Cl. 53—26 **29 Claims**



Apparatus and method for automatically packing bottles into a series of cases in a necks-down position. Means are provided for receiving the bottles in an upright position on a rotatable support, rotating the support to a position in which the bottles are held necks-down and releasing said bottles in such necks-down position into an elevated case. Guides and hold-back means are provided both for the cases and the bottles to insure properly timed automatic operation.

3,694,994

METHOD AND APPARATUS FOR PACKAGING JARS AND LIKE ARTICLES IN CARTONS

Henry Morgan Corderoy, Gladesville, New South Wales, Australia, assignor to A.C.I. Operations Pty. Limited, Melbourne, Victoria, Australia

Filed Dec. 1, 1970, Ser. No. 94,076

Claims priority, application Australia, Dec. 2, 1969, 64585/69

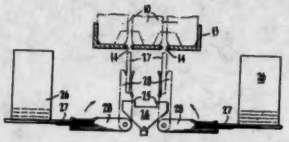
Int. Cl. B65b *24/06*

U.S. Cl. 53—26 **9 Claims**

Jars or the like are arranged in columns and rows on a conveyor plate which is provided with longitudinal and transverse slots to permit partition strips to be passed upwardly therethrough for placement between said columns and rows of jars or the like.

Partition strip inserting means arranged beneath the conveyor plate, collect partition strips from magazines and insert them upwardly through said slots.

Partition strips at one partition strip inserting station are in-



serted at right angles to those inserted at the next immediate station, the last-mentioned strips serving to force the first-mentioned strips upwardly between said columns or rows of jars or the like.

The jars or the like with partition strips inserted are then packed into cartons or bound together by suitable binding material.

3,694,995

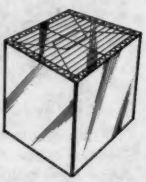
CORRUGATE-FILM LAMINATE PACKAGE MATERIAL AND PACKAGE

James C. McKinney, Greenville, S.C., assignor to W. R. Grace & Co., Duncan, S.C.

Filed Sept. 10, 1970, Ser. No. 71,063

Int. Cl. B65b *53/02*

U.S. Cl. 53—30 **4 Claims**



This invention comprises a corrugated package material wherein the corrugated fluting is attached to one or more sheets of heat shrinkable polymeric film. The heat shrinkable film is preferably on only one side of the corrugated fluting, but may be on both sides of the corrugated fluting. This packaging material is then formed into a carton and this carton filled; or is used to bundle a series of containers, and the final assembly, whether a carton or bundle, heat shrunk, whereby the strength of the corrugate is increased.

3,694,996

INSTALLATION FOR THE FILLING OF PALLETS WITH FRUIT OR OTHER EASILY DAMAGED PRODUCTS

Earl W. Carlsen, Yakima, Wash., assignor to Food Industries Research & Engineering, Inc., Yakima, Wash.

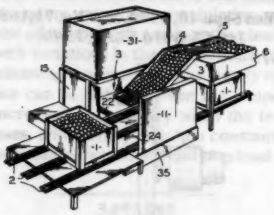
Filed Nov. 20, 1970, Ser. No. 91,287

Int. Cl. B65b *5/06, 57/14*

U.S. Cl. 53—35 **8 Claims**

The installation comprises a roller bed **2** for pallets **1** passing beneath a fruit feed unit **4** to a position called the filling point **3**; a tank-forming arrangement of liquid-tight partitions positioned around the filling point, some of which at least, are movable and may selectively occupy either an operative position in which they laterally close the filling point, or a non-operative position in which, on the other hand, they permit passage of the pallets; means for placing a predetermined quantity of liquid in the tank; means for rapidly, continuously flowing fruit into the tank to overflow the tank; means for

placing a predetermined fraction of the overflowed liquid into a metering column; means responsive to height of liquid in the



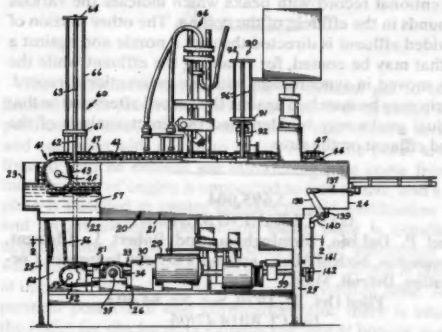
column to stop the flowing of fruit into the tank; and means for rapidly emptying the tank of said liquid.

3,694,997

FOOD PACKAGING MACHINE WITH SYNCHRONIZED DRIVE MECHANISM

William C. Christine, Catasauqua, and Joseph E. Pierce, Allentown, both of Pa., assignors to A. E. J. Corporation, Bethlehem, Pa.

Filed July 10, 1970, Ser. No. 53,947
Int. Cl. B65b *3/00, 31/02*
U.S. Cl. 53—112 R **7 Claims**



Apparatus for packaging food products and including mechanism for dispensing containers onto an endless conveyor, filling the containers with flowable material, placing a cover on the filled containers, sealing the cover to the container, and discharging the sealed containers from the machine. All of the individual mechanisms are driven from a single source of power so that all of such mechanisms will be synchronized and will remain in time relationship with each other at all times. Also, novel means are provided for discharging filled and capped containers from the endless conveyor. The discharge means include a container raising cam, a notched receiver plate, a pair of fixed support rods and means for reciprocating the receiver plate to discharge containers from the conveyor onto the support rods.

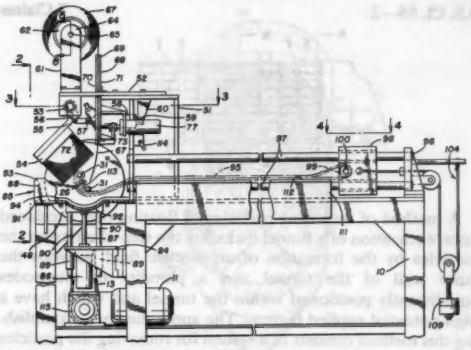
3,694,998

APPARATUS FOR WRAPPING A FLEXIBLE ENDLESS BAND INTO A COIL

Max D. Brinkley, North Canton, Ohio, and Glenn D. Kerr, Akron, Ohio, assignors to Goodyear Tire and Rubber Company, Akron, Ohio

Filed June 25, 1970, Ser. No. 49,684
Int. Cl. B65b *13/04, 63/04*
U.S. Cl. 53—116 **12 Claims**

An apparatus for wrapping a flexible endless band into a coil comprising; a pair of pins mounted for rotation about a common axis parallel to the pins for wrapping the band, a carriage movable toward and away from the pins and having a peg thereon over which the band is placed, means to retard the motion of the carriage to apply tension to the band while it is being wrapped about the pins, means for withdrawing the peg and means for ejecting the coiled band from the pins. Means are also provided to feed tape to the band as it is being



wrapped so that the tape is wrapped up with the band and holds the band in a coiled configuration.

The foregoing abstract is not to be taken as limiting the invention of this application, and in order to understand the full nature and extent of the technical disclosure of this application, reference must be made to the accompanying drawings and the following detailed description.

3,694,999

BOX LIDDING MACHINE

Vincent S. Switliski, Glen Olden, Pa., and Arthur R. Harmon, Port Republic, N.J., assignors to Charles Beck Machine Corporation, King of Prussia, Pa.

Filed July 15, 1970, Ser. No. 55,058
Int. Cl. B65b *7/28*
U.S. Cl. 53—313 **3 Claims**

A box lidding machine has a box support along which the bases of the boxes are moved at a predetermined speed by a conveyor having pivoted fingers presenting upper ends projecting above the conveyor to engage the base of a box while the lower ends of the fingers are engagable with a vertically adjustable member movable to vary the distance to which the fingers will project above the box support. Lids are moved at a slower speed than the bases along a converging path and into a position wherein the foremost lid is held in place by yieldable detents. When thus positioned the foremost lid is engaged by the base of a box moving along the box support, and is then pressed down into a closing position on the base of the box.

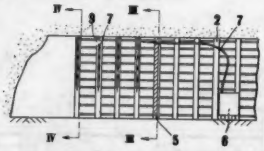
3,695,000

Patent Not Issued For This Number

3,695,001
METHOD AND SYSTEM FOR REMOVING PARTICLES OF FLOATING DUSTS PRODUCED UPON AN EXCAVATION OF A TUNNEL

Tamotsu Watanabe, Tokyo, Japan, assignor to Nippon Kogei Kogyo Company, Ltd., Tokyo, Japan

Filed March 24, 1970, Ser. No. 22,336
Claims priority, application Japan, Dec. 29, 1969, 45/1271
Int. Cl. B03c *3/43*
U.S. Cl. 55—2 7 Claims

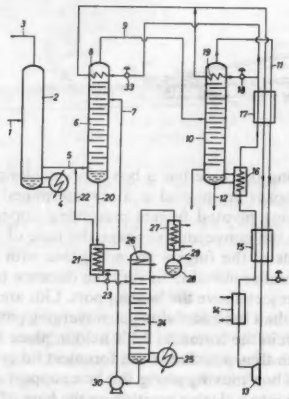


A method of removing particles of floating dust produced upon excavation of a tunnel including the step of charging the particles by the formation of an electric field between the inner wall of the tunnel and a plurality of electrodes equidistantly positioned within the tunnel and which have a high potential applied thereto. The apparatus for accomplishing this method consists of a system for removing the particles of floating dust produced upon excavation of the tunnel and including a plurality of electrodes equidistantly positioned with respect to the tunnel wall for forming an electric field between the inner wall of the tunnel and the electrodes so as to charge the particles, a plurality of posts provided in the tunnel for supporting the electrodes, and a high voltage supply for applying a high potential to the electrodes whereby the particles are electrically deposited on the inner wall of the tunnel.

3,695,002
PROCESS FOR PRODUCTION OF PURE ETHYLENE

Friedrich Rottmayr, and Hans Reimann, both of 8023 Pullach, Germany, assignors to Linde Aktiengesellschaft Zentrale Patentabteilung, Munich, Germany

Filed Sept. 1, 1970, Ser. No. 68,672
Claims priority, application Germany, Sept. 2, 1971, P 19 44 505.7
Int. Cl. B01d *19/00*
U.S. Cl. 55—64 16 Claims

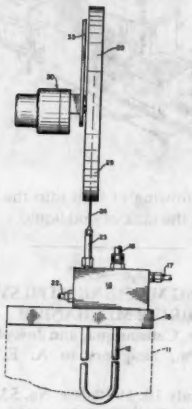


A process for the production of acetylene-free ethylene from a mixture of C_2-hydrocarbons by selective absorption of the acetylene and separation of the ethane by rectification in which the acetylene is selectively absorbed at a pressure of more than 5 atmospheres absolute, preferably within a pressure range of 8–40 atmospheres absolute with a polar aprotic solvent boiling higher than 120° C.

3,695,003
GAS CHROMATOGRAPHY METHOD AND APPARATUS

Valery N. Bednarski, c/o Texaco Inc., P.O. Box 425, Bellaire, Tex.

Filed Sept. 10, 1970, Ser. No. 71,165
Int. Cl. B01d *53/04, 15/08*
U.S. Cl. 55—67 3 Claims

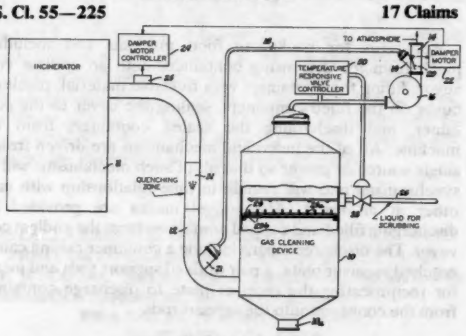


A gas chromatograph which divides the effluent stream from its column into two portions. One portion is for obtaining a conventional record with peaks which indicate the various compounds in the effluent of the colunn. The other portion of the divided effluent is directed through a nozzle and against a strip, that may be coated, for retaining the effluent while the strip is moved in synchronism with the conventional record. The strip may be matched against the record afterward so that individual peaks may be identified by direct analysis of the trapped effluent on the strip.

3,695,004
GAS CLEANING SYSTEM

Michael P. DeLisio, Birmingham, and Robert L. Clement, Farmington, both of Mich., assignors to Arco Industries Corporation, Detroit, Mich.

Filed Oct. 27, 1970, Ser. No. 84,403
Int. Cl. B01d *47/06*
U.S. Cl. 55—225 17 Claims



A gas cleaning system for cleaning gases from an incinerator or the like wherein the gas is discharged at a variable rate including a gas cleaning device such as a wet scrubber that requires gas to be fed into the scrubber at a minimum velocity for efficient operation. A delivery duct feeds the gases from the incinerator to the cleaning device and a discharge duct conducts the gas from the cleaning device. A blower forces or induces the gas through the discharge duct. In order to maintain an efficient rate of flow of gas into the cleaning device, a recirculating duct has one end connected with the discharge duct on the downstream side of the blower and its other end connected with the delivery duct, and flow is proportioned

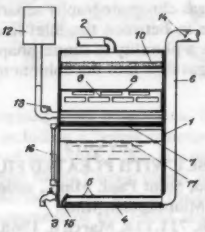
between the recirculating duct and the delivery duct in accordance with variations in the velocity of the gas in the delivery duct so that the gas entering the cleaning device is maintained at an efficient rate of flow. The system further includes a temperature responsive modulating valve for controlling the flow of scrubbing liquid into the cleaning device in accordance with variations in the temperature of the gas exiting from the cleaning device so that the supply of water to the cleaning device can be reduced when the temperature drops and can be increased as necessary when the temperature of the gas increases, and thereby maintain constant temperature and gas weight to the blower to prevent overload of the driving device.

3,695,005

PURIFICATION DEVICE FOR EXHAUST GAS

Masaharu Yuzawa, 10-23, 2-chome, Kamiikedai, Ota-ku, Tokyo, Japan

Filed Nov. 4, 1970, Ser. No. 86,890
Int. Cl. B01d *50/00*
U.S. Cl. 55—255 **1 Claim**



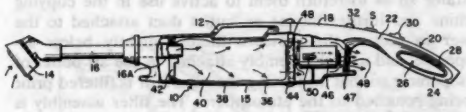
The purification device for use of exhaust gas to be embodied by the present invention consists of a vertically longer purification tank, and at bottom of the tank there is arranged and equipped with nozzle to which many fine pores are perforated; and an exhaust gas introducing pipe come from exhausting part of engine is connected to said nozzle, and a filter plate is installed at center position of said purification tank, and an entrainment prevention baffle plate is installed at upper position of said filter plate, and an adsorption zone which is filled up with particles of activated carbon is installed at upper position of said entrainment prevention plate. At uppermost position of said purification tank, there is attached the outlet for discharge of exhaust gas, and at bottom position of the tank there is attached a discharge outlet for draining the solution. The purification solution is filled up to an appropriate level which level is lower for the position than the filter plate in said purification tank. A pouring inlet for supply of purification solution is equipped to said purification tank.

3,695,006

VACUUM CLEANER

Bruno M. Valbona, Avon; William J. Conlon, New Britain, and Harry M. Voglesonger, Riverton, all of Conn., assignors to Dynamics Corporation of America, New York, N.Y.

Filed Oct. 23, 1970, Ser. No. 83,504
Int. Cl. B01d *46/02*
U.S. Cl. 55—274 **19 Claims**



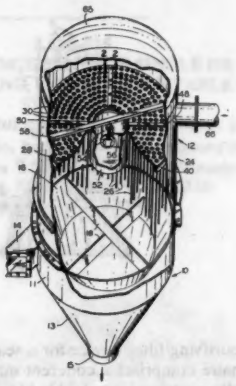
A multi-speed electrically driven, lightweight vacuum cleaner with a switch manually held closed for momentary extra high speed and air volume surge. A warning light responsive to rising temperature of motor cooled by filtered exhaust air passing through the motor indicates when a filter bag should be emptied.

3,695,007

APPARATUS FOR REMOVING PARTICULATE MATERIAL FROM GASES

Wilfred Farnworth, North Vancouver, British Columbia, Canada, assignor to Rader Pneumatics Incorporated, Portland, Oreg.

Filed Aug. 14, 1970, Ser. No. 63,772
Int. Cl. B01d *46/04*
U.S. Cl. 55—294 **3 Claims**



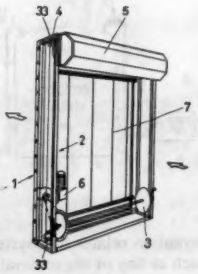
Apparatus for removing particulates from gases comprises cyclone separator and tube filter mounted thereover. Baffles are provided to direct air flow from separator to tube filter. Tube filter comprises long porous tubes suspended from plate, latter being divided into sections to facilitate removal for repair of tubes. Backwash device for tubes comprises hollow arm to create air pulses in tubes driven by motor mounted in well of plate.

3,695,008

ROLLER STRIP FILTER FOR PURIFYING AIR OR GASES

Gerhard Neumann, Berlin, Germany, assignor to Delbag-Luftfilter Gesellschaft mit beschrankter Haftung, Berlin, Germany

Filed Jan. 15, 1970, Ser. No. 2,995
Claims priority, application Germany, Jan. 21, 1969, G 69 02 635; Jan. 21, 1969, G 69 02 636; Jan. 21, 1969, G 69 02 637
Int. Cl. B01d *25/24*
U.S. Cl. 55—354 **23 Claims**



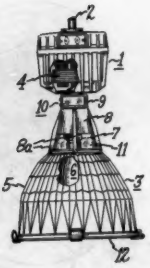
A roller-strip filter for air or gas purification, which can be easily disassembled, consists of two units separable from each other. The first unit comprises a mounting framework, seals for the filter strip and support grids for backing the filter strip, guide rollers for the filter strip; the second unit comprises feed and wind-up rollers for moving the filter strip and a drive unit for rotating the wind-up roller, whereby the more delicate components can be mounted in the filter framework after fitting the framework to a wall portion or the like.

3,695,009

AIR FILTER DEVICE

Mitchell M. Osteen, Rte. 1, Zirconia, N.C.

Filed March 30, 1970, Ser. No. 23,912
Int. Cl. B01d 50/00
U.S. Cl. 55—385 3 Claims



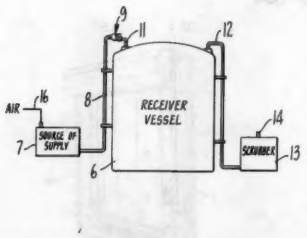
An air-purifying filter device for a sealed optical enclosure of a luminaire comprises a coherent mass of activated charcoal particles contained in a rigid holder and having a plurality of recesses in its surface to increase the filter surface area, lower its air flow resistance, and reduce the amount of contaminant deposit thereon. The filter device is arranged in an enclosure formed by separable connecting parts of the luminaire in communication with the sealed optical enclosure.

3,695,010

TANK VENTING SYSTEM

James R. Barrett, Novato, Calif., assignor to Fiberglass Structures

Filed Aug. 28, 1970, Ser. No. 67,797
Int. Cl. B01d 19/00
U.S. Cl. 55—385 2 Claims



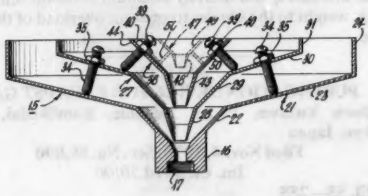
The present invention relates to a system for transferring a noxious liquid such as any of the mineral acids from a source of supply under air pressure to a tank and for removing the noxious gas from the tank as the tank is filled. The gas is scrubbed to permit release of the air displaced from the tank to the atmosphere free of any noxious components. The inlet line to the tank includes valve means permitting the free flow of liquid to the tank only as long as the liquid being reduced so that air is present, a valve in the valve means seats on the outlet from the valve means to permit only a small quantity of air to pass into the tank until the air pressure on the source of supply has been relieved, the released air being passed through the scrubber.

3,695,011

GAS FLOW DIFFUSER

Okie R. Leech, and Ernest A. Dewey, both of Richmond, Va., assignors to Texaco Inc., New York, N.Y.

Filed May 26, 1971, Ser. No. 147,053
Int. Cl. B01d 53/04
U.S. Cl. 55—386 8 Claims



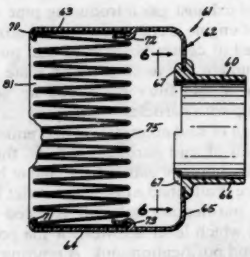
For large-scale gas chromatography separation apparatus, a diffusing structure in between the inlet line and the packed column. There are a plurality of funnel-shaped coaxial baffles for spreading the gas flow into the column to reduce channeling in the column.

3,695,012

FILTER ASSEMBLY WITH PLEATED FILTER ELEMENT

William C. Rolland, Saint Paul, Minn., assignor to Donaldson Company, Inc., Minneapolis, Minn.

Division of Ser. No. 711,114, March 6, 1968. This application April 23, 1970, Ser. No. 43,304
Int. Cl. B01d 27/06
U.S. Cl. 55—499 2 Claims



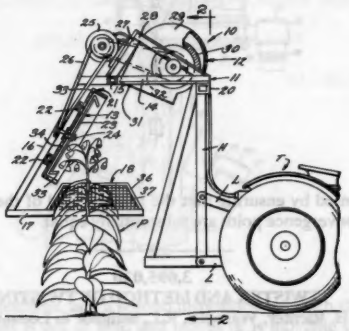
In dry copying machines utilizing particulate toner a particle conveying system including a plurality of pneumatic ducts and a blower with a vacuum-type pickup device attached to an inlet of the blower and positioned to remove loose particles from the copies as they egress from the copying machine, a centrifugal separator positioned in the pneumatic system to receive the air and particles from the vacuum pickup device and separate the particles from the bulk of the air, a particle settling chamber having baffles therein attached to the copying machine and receiving separated particles from the separator so as to return them to active use in the copying machine and further having an outlet duct attached to the blower to reduce the pressure therein slightly below atmospheric, and a filter assembly attached to the air outlet of the separator so that air leaving the separator is filtered prior to being returned to the atmosphere. The filter assembly is constructed from an extruded plastic housing having two side walls and a joining wall connected to provide a U-shaped cross section and a pleated filter element connected to the sidewalls opposite the joining wall and end walls formed of plastic while in its formable state and subsequently hardened to provide sealing engagement with the ends of said housing and pleated filter.

3,695,013

APPARATUS FOR TOPPING STALK-TYPE PLANTS

Walter Cecil Hammond, Tifton, Ga., assignor to Powell Manufacturing Company, Inc., Bennettsville, S.C.

Continuation-in-part of Ser. No. 114,488, Feb. 10, 1971, abandoned. This application June 15, 1971, Ser. No. 153,382
Int. Cl. A01d *45/02*
U.S. Cl. 56—63 17 Claims



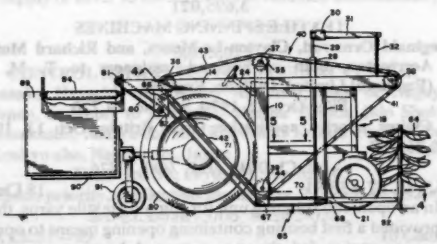
Apparatus for topping stalk-type plants such as tobacco, corn and the like including a frame structure adapted to be moved along a row of stalk-type plants in a position of general clearance with respect to the topped plants, a power operated blower assembly carried by the frame structure operable in response to the movement of the frame structure along the row to establish a continuous flow of air in a direction generally downwardly on the top portion of successive plants in the row with a velocity sufficient to deflect the top leaves of the plants downwardly and a power operated cutting assembly carried by the frame structure operable in response to the movement of the frame structure along the row to cut and remove the top portion of successive plants in the row at a predetermined stalk height without cutting leaves attached to the stalk below the predetermined height by virtue of the leaves having been deflected downwardly by the flow of air, the power operated cutting assembly preferably embodies a high speed rotary cutting blade particularly suited for topping tobacco plants operable to cut the top portion of the tobacco plants into small particles and impart a movement thereto, the rotary cutting blade being disposed in cooperating relation with a shroud assembly for confining the movement of the small particles to a predetermined path substantially out of contact with the tobacco plants of the row and adjacent rows.

3,695,014

TOBACCO HARVESTERS

John G. Alphin, and John B. Pitner, both of Florence, S.C., assignors to Clemson University, Clemson, S.C.

Filed Feb. 17, 1970, Ser. No. 12,024
Int. Cl. A01d *45/16*
U.S. Cl. 56—27.5 18 Claims



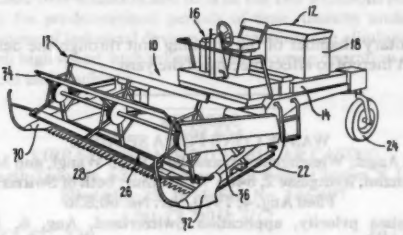
A tobacco harvester comprising a mobile unit with an endless defoliator belt mounted on roller assemblies. There are front and rear upper assemblies and a lower intermediate assembly to provide a lower V-shaped path including a front stripping course, a rear conveyor course and a generally horizontal return course. The belt is provided with openings spaced apart a sufficient distance so that as the belt is travelling diagonally downwardly over its front stripping course each of the stalks will enter one of the openings and the sides of each opening will push the leaves of the stalk downwardly and remove them.

3,695,015

DEFLECTOR ARRANGEMENT FOR SINGLE OR DOUBLE WINDOW LAYING, CONVERTIBLE TABLE FOR SWATHERS

William H. Twidale, Islington, Ontario, and Mark K. Byrnes, Mississauga, Ontario, both of Canada, assignors to Massey-Fergusen Industries Limited, Toronto, Ontario, Canada

Filed Sept. 7, 1971, Ser. No. 178,226
Int. Cl. A01d *43/00*
U.S. Cl. 56—181 6 Claims



A deflector arrangement for a transversely shiftable swath table assembly for windrower type harvester is comprised of two individually hinged overlying deflector blades at one outer end of the table assembly. The one deflector blade adjacent said end is used only for laying a single windrow and is inactive when laying a double windrow. The other deflector blade is normally spring biased away from said end of the table assembly in one position and the table assembly is provided with an actuating member adapted to move the other deflector blade against the end of the table assembly when the table assembly is shifted to the other position.

3,695,016

Patent Not Issued For This Number

3,695,017

AUTOMATIC YARN PIECING APPARATUS FOR SPINDLELESS SPINNING MACHINE

Kiyokazu Hori; Tatsuo Kose, and Kazuo Ochi, all of Wakayama, Japan, assignors to Daiwa Boseki Kabushiki Kaisha, Osaka, Japan

Filed March 11, 1970, Ser. No. 18,596
Claims priority, application Japan, Mar. 15, 1969, 44/19943; Dec. 16, 1969, 44/101514; Dec. 19, 1969, 44/102821
Int. Cl. D01h *15/00*
U.S. Cl. 57—34 R 4 Claims

An automatic yarn piecing apparatus for use with an spindleless spinning machine of the type having a plurality of spinning units each of which spins fiber materials into a yarn and deliver the thus-formed yarn to be taken up on a bobbin. The apparatus travels along the front face of the spinning machine and stops at the position of a particular spinning unit wherein yarn breakage has occurred, to automatically piece the broken yarn by the cooperation of various means in such a manner that the broken yarn is withdrawn from the yarn package on the bobbin, gripped and cut to form a new cut end

of the yarn while simultaneously removing the snarl from the yarn end, and then the cut end of the yarn is introduced into

the rotary chamber of the spinning unit through the delivery outlet thereof to effect piecing of the yarn.

3,695,018

WASTE CONE FOR A SPINDLE

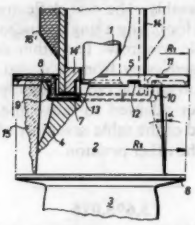
Kurt Angst, Wiesengrundstrasse 547, 9545 Wangi, and Marco Tunzini, Reutgasse 2, 8406 Winterthur, both of Switzerland

Filed Aug. 4, 1970, Ser. No. 60,836

Claims priority, application Switzerland, Aug. 6, 1969, 11974/69

Int. Cl. D01h *1/38*

U.S. Cl. 57—34 PW **20 Claims**



The waste cone is provided with a removable flange or pivotally mounted fingers which have outwardly directed extensions. The flange and extensions each serve to increase the radial extent of the upper end of the waste cone so as to trap larger quantities of waste material while preventing upward sliding of the accumulated waste.

3,695,019

METHOD AND APPARATUS FOR FORMING YARN

James Lappage, 4 Shackleton St., Belmont, Victoria, Australia

Filed June 16, 1970, Ser. No. 46,666

Claims priority, application Australia, June 17, 1969, 56569/69

Int. Cl. D01h *7/00*; **D02g** *3/26, 3/28*

U.S. Cl. 57—38.3 **9 Claims**

In a spinning operation in which two strands are fed from separate nip positions and are twisted together into a single ply at a convergence point, twist is incorporated into the single strands by cyclically varying the path lengths of the strands between the nip positions and the convergence point. Preferential spiralling of one strand about the other is

prevented by ensuring that the ratio of feed of the strands to the convergence point are substantially equal.

3,695,020

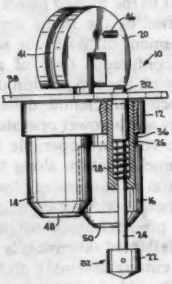
TWISTER AND METHOD OF TWISTING

Hans H. Richter, Warwick, R.I., assignor to Leesona Corporation, Warwick, R.I.

Filed May 6, 1970, Ser. No. 25,559

Int. Cl. D02g *1/04*

U.S. Cl. 57—77.4 **18 Claims**



A method is disclosed for imparting twist to textile filaments and a friction twister therefor wherein a plurality of turns of twist are imparted to the filament for each revolution of the friction twister. The disclosed friction twister comprises two hollow spindles containing frictional engagement means therein. The two spindles are driven by pivoting the twister about a pivot point so that the hollow spindles come into engagement with a drive belt that passes between the spindles. Reversing guide means is provided to allow a filament to enter the front portion of one spindle and exit from the front portion of the other spindle. Another embodiment of the reversing guide means has a capacity to handle two filaments simultaneously.

3,695,021

TEXTILE SPINNING MACHINES

Reginald Ormerod, Clayton-Le-Moors, and Richard Motler, Accrington, both of England, assignors to T. M. M. (Research) Limited, Oldham, England

Filed Oct. 12, 1970, Ser. No. 79,720

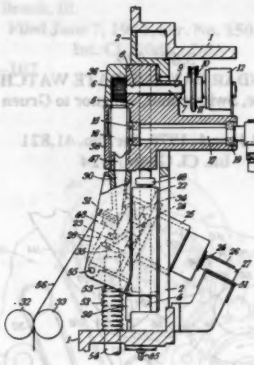
Claims priority, application Great Britain, Oct. 13, 1969, 50,263/69

Int. Cl. D01h *1/12, 7/00, 13/26*

U.S. Cl. 57—58.91 **18 Claims**

In an open-end spinning unit for spinning textile yarns, there is provided a first housing containing opening means to open a sliver or roving fed thereto, a second housing containing spinning fibers delivered by said opening means, and a closure member for the spinning means mounted on the second hous-

ing, the first and second housings being movable between a first disposition in which the closure member is held thereby in a closed position and which they occupy during normal work-



ing of the machine, and a second disposition in which the closure member is not so held and moves or is movable to gain access to the spinning means.

3,695,022

METHOD AND APPARATUS FOR THE INTERRUPTION OF SILVER SUPPLY IN OPEN END SPINNING MACHINES

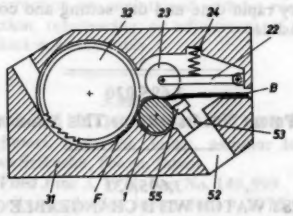
Hans Landwehrkamp, Gerolfing, Germany, assignor to Schubert & Salzer Maschinenfabrik Aktiengesellschaft, Ingolstadt, Germany

Filed Oct. 19, 1970, Ser. No. 81,731

Claims priority, application Germany, Nov. 13, 1969, P 19 57 014.0

Int. Cl. D01h *1/22, 1/12*

U.S. Cl. 57—81 **7 Claims**



Sliver supplied to a combing machine and/or to an open end spinning machine is clamped closely adjacent to the line of contact between a driven supply roll and a resiliently engaged cooperating loading device, the distance between the contact line and the clamping location preferably being less than the average staple fiber length in the sliver. Such sliver clamp, when actuated, simultaneously separates the loading device from the driven supply roll, and when such clamp is released the supply of sliver to the separator is resumed automatically.

3,695,023

CONTROL APPARATUS FOR FLUID ACTUATOR

Yasutaka Hayashi, and Hideo Arakawa, both of Nagoya, Japan, assignors to Kabushiki Kaisha Toyoda Jido Shokki Seisakusho, Kariya-shi and Kabushiki Kaisha Toyota Chuo Kenkyu-sho, Nagoya-shi, Japan

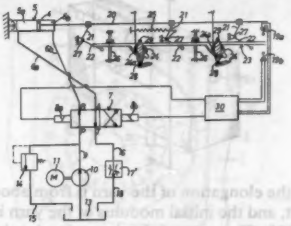
Filed Oct. 30, 1970, Ser. No. 85,403

Claims priority, application Japan, Nov. 7, 1969, 44/89200

Int. Cl. D01h *13/06;* **B65h** *54/28*

U.S. Cl. 57—99 **10 Claims**

A control method and apparatus for a fluid actuator to control the movement of objects, which includes an electro-hydraulic or pneumatic selector valve to regulate the actuator, a pressure fluid reservoir, conduits to connect the actuator to the reservoir through the selector valve, a fluid pump disposed within one of the conduits for supplying pressure fluid from the reservoir to the actuator through the selector valve, limit switches operated by the movement of the objects to energize an electrical control or timing circuit to control operation of



the selector valve. Operation of the selector valve functions to switch over the situation of the pressure fluid within the actuator to and from the switched-over-situation and/or the unswitched-over-situation and to hold the two situations respectively for predetermined periods of time, thereby undesired vibrations of industrial devices and machines are eliminated to permit high speed, high pressure and accurate operation of the devices and machines.

3,695,024

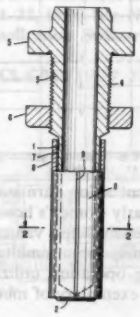
VIBRATION-DAMPED TUBULAR CASING

Kenneth Tsunoda, 625 D Closter Dock Road, Closter, N.J.

Filed May 25, 1971, Ser. No. 146,697

Int. Cl. D01h *7/12*

U.S. Cl. 57—130 **10 Claims**



The noise generated in a tubular casing such as the bolster casing of a textile spindle assembly is appreciably diminished by coating the outer surface of the casing with a viscoelastic material and adhering a rigid sheet to the viscoelastic material. The rigid sheet forms a discontinuous cylinder with at least one gap extending over the full length thereof.

3,695,025

FIBRILLATED FILM YARN

John D. Gibbon, Charlotte, N.C., assignor to Fiber Industries, Inc.

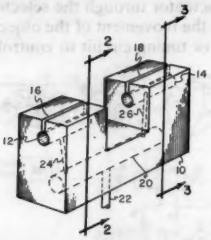
Filed July 30, 1970, Ser. No. 59,383

Int. Cl. D02g *3/06, 3/22, 1/16*

U.S. Cl. 57—140 R **5 Claims**

There is provided a fibrillated continuous filament yarn comprised of random-length fibrils of a synthetic organic high polymer wherein: the average width/thickness ratio of cross sections of the fibrils (the "aspect ratio") is from about 2/1 to about 12/1, and the aspect ratios of the cross sections of the fibrils range from about 0.5/1 to about 20/1; the fibrils in the yarn exceeding 40 centimeters in length comprise at least 70 percent (by weight) of the yarn; the tenacity of the yarn is

from about 0.1 to about 10 grams per denier; the total denier of the yarn is from 30 to about 10,000, and the average denier per fibril of the fibrils comprising the yarn is from about 0.5 to



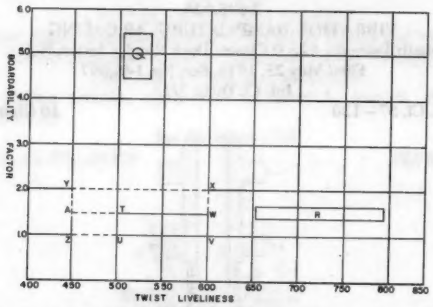
about 60; the elongation of the yarn is from about 0.5 to about 75 percent; and the initial modulus of the yarn is from about 2 to about 300. The yarn of this invention has high tenacity, a soft hand, and good cover.

3,695,026

FLANGE FALSE TWIST TEXTURED NYLON

Michael P. Taylor, Charlotte, N.C., assignor to Fiber Industries, Inc.

Filed Aug. 6, 1970, Ser. No. 61,526
Int. Cl. D02g *3/24*
U.S. Cl. 57—140 R **13 Claims**



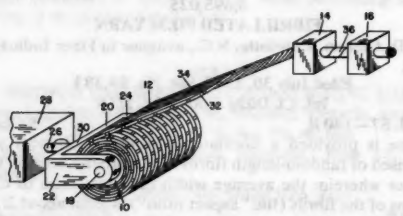
A novel monofilament nylon yarn suitable for use in knit constructions, particularly women's hosiery, characterized by its boardability and twist-liveliness values is disclosed. A false twist process, which may be a simultaneous or sequential drawing, false twisting operation utilizing a twist insertion flange, is disclosed as exemplary of methods to produce the yarn.

3,695,027

METHOD FOR MAKING TWISTED CABLE

Albert R. Copp, 42 Lincoln St., Hudson, Mass.

Division of Ser. No. 50,029, June 26, 1970, Pat. No. 3,609,256.
This application June 7, 1971, Ser. No. 150,521
Int. Cl. D07b *5/10*; H01b *13/00*
U.S. Cl. 57—162 **5 Claims**



A method for making twisted cable. As flat cable is processed, it is twisted. A retaining jacket is applied to the twisted cable.

3,695,028

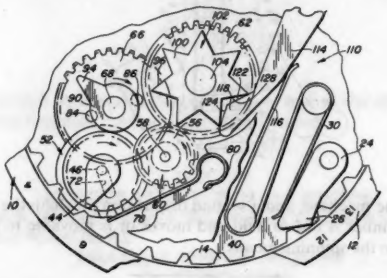
Patent Not Issued For This Number

3,695,029

CALENDAR DAY AND DATE WATCH

Jean Tripet, Bienne, Switzerland, assignor to Gruen Industries, Inc.

Filed June 1, 1970, Ser. No. 41,821
Int. Cl. G04b *19/24*
U.S. Cl. 58—58 **5 Claims**



In a calendar watch, a day and date drive and dial indicator stepping mechanism including a pair of rotatably driven cams, the cams being geared to revolve at relatively different rates, one of the cams rotating at the rate of one revolution per day and operable to advance a day-indicator dial one step each day, and the second of the cams rotating at a rate of n revolutions per day, n being an integer greater than one, the second cam being rotatable about a shaft slidably engaged in a guide groove, means being provided to shift the second cam for periodic engagement with and to advance a date-indicating calendar ring one step for each n revolutions of the cam, whereby very rapid date and day setting and correction are rendered feasible.

3,695,030

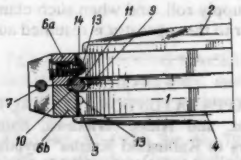
Patent Not Issued For This Number

3,695,031

WRIST WATCH WITH CHANGEABLE CASE

Bruno Loeb, 37, Chemin des Plantes, 2520 La Neuveville, Switzerland

Filed Dec. 6, 1971, Ser. No. 204,836
Claims priority, application Switzerland, Dec. 8, 1970, 18168/70
Int. Cl. G04b *37/00*
U.S. Cl. 58—88 R **10 Claims**



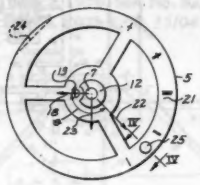
A wrist watch which has an encased movement provided with a crystal, a sidewall, a bottom and a winding crown, and which includes a reversible housing center part as retaining member equipped with stems for fastening to a watchband, and presenting in its bore a spring wire, seated in a circular groove, as fastening means for the movement, which spring wire pushes into a circular groove in the movement.

3,695,032

ISOCHRONAL CORRECTION SYSTEM

Robert R. Lawson, Somerset, and Leonard L. Metzinger, Delavan, both of Wis., assignors to Bunker Ramo Corporation, Oak Brook, Ill.

Filed June 7, 1971, Ser. No. 150,586
Int. Cl. G04b 17/00
U.S. Cl. 58—107 11 Claims



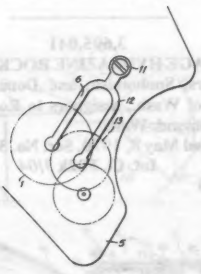
An isochronal correction system for mechanical clock movements, such as automobile clocks, enabling clockworks which have been isochronally balanced within acceptable limits to perform satisfactorily in a predetermined gravitational position, such as vertically to meet the most general or usual service mounting of the clock, nevertheless providing for utilization where for some reason, such as variation of position or accessibility of the usual clock-setting stem, the clockworks must be mounted in a different position in which it has been rotated beyond the plus or minus degrees of variation permitted by the standard, i.e., vertical, orientation accommodating the original isochronal correction. To this end, means in the form of a weight relationship on the balance wheel are provided to compensate for the deviation from the standard balancing relationship. Thereby performance characteristics substantially equivalent to the standardized isochronal correction are maintained without requiring special construction, rebalancing, or adjustment of the various parts of the clockwork assembly.

3,695,033

CONTROLLING DEVICE FOR AN ESCAPE WHEEL

Motoyuji Fujimori, Suwa-shi, Japan, assignor to Kabishiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed June 3, 1971, Ser. No. 149,599
Claims priority, application Japan, June 9, 1970, 45/56291
Int. Cl. G04b 15/00
U.S. Cl. 58—116 R 3 Claims



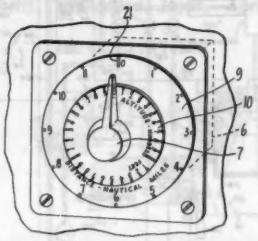
A controlling device for an escape wheel supported between a bridge and a plate, the controlling device including a resilient member provided on the bridge or plate and positioned to apply force axially to the escape wheel. The resilient member may be U-Shaped and positioned to apply force axially to the escape wheel and a second wheel.

3,695,034

APPROACH COMPUTER FOR AIRCRAFT

Ivan W. Nealon, 364 Darrell Road, Hillsborough, Calif.

Filed Nov. 19, 1970, Ser. No. 91,063
Int. Cl. G04b 47/06
U.S. Cl. 58—152 R 7 Claims



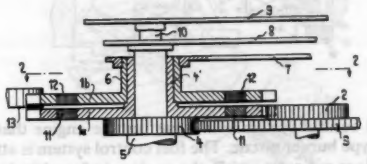
An approach computer device is provided for an aircraft approaching a landing field to enable the pilot to have before him during the approach a device which shows the distance to the landing field and, correlated with that distance, the altitude at which the plane should be flying at such distance. The distance to be flown is set as the plane passes over the final approach fix from which the plane is to approach the field at a constant rate of speed. The device is calibrated to provide a constant rate of descent, such as 500 feet per minute.

3,695,035

TIMEPIECE MOVEMENT

Willy Cleusix, Biel, Switzerland, assignor to Omega Louis Brandt & Frere S.A. Biel, Canton of Bern, Switzerland

Filed Sept. 22, 1970, Ser. No. 74,278
Claims priority, application Switzerland, Oct. 27, 1969, 15965/69
Int. Cl. G04b 19/22, 27/00
U.S. Cl. 58—42.5 14 Claims



A timepiece movement for driving a plurality of hands, one of which is an hour hand, includes a power train and a pair of identical, coaxially mounted independently rotatable gears operatively connected with the hour hand, one of said gears being driven by said power train and the other of said gears being selectively operated manually, and magnetic means normally coupling said gears for simultaneous rotation but permitting adjustment of said one gear relative to the other to change the indication of said hour hand without affecting any other hand, whereupon following such adjustment said magnetic means effects coincidence of said gears to accurately position the hour hand.

3,695,036

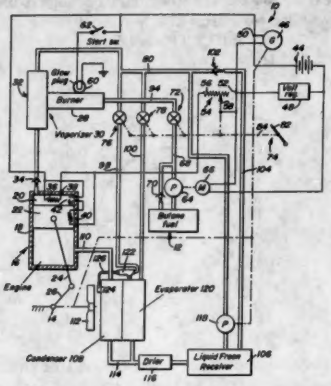
INTERNAL EXPANSION VAPOR ENGINE

James Earl Martin, Sr., 506 Wanda St., San Angelo, Tex.

Filed Jan. 23, 1970, Ser. No. 5,253
Int. Cl. F01k 25/10
U.S. Cl. 60—27 19 Claims

The expansion of a low boiling point refrigerant is converted into useful work by supply of heat energy to the refrigerant internally of an expansible chamber type of prime

mover. The heat energy is derived from an electrical source regulated by a power control which also governs circulation of



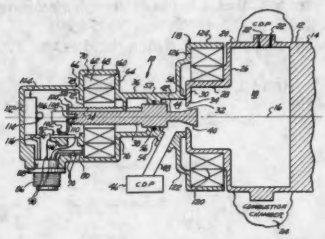
the refrigerant through a refrigeration cycle and generation of heat to pressurize the refrigerant for injection into the working chamber of the prime mover.

3,695,037

SHAFT MOUNTED FUEL CONTROL

Julius Alverani, Dearborn, Mich., assignor to Teledyne Industries, Inc., Los Angeles, Calif.

Filed Sept. 8, 1970, Ser. No. 70,378
Int. Cl. F02c *9/08*
U.S. Cl. 60—39.28 **12 Claims**



A fuel control system with a gas turbine engine that has a slinger-type burner nozzle. The fuel control system is attached to, but does not rotate with, the engine shaft and includes an electronically controlled valve member operated by a reversible motor upstream of the slinger nozzles for controlling the supply of fuel thereto. Fuel is delivered to the valve member from the fuel tank which is pressurized to compressor discharge pressure.

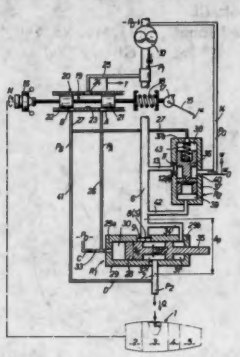
3,695,038

INSTALLATION OR PLANT CONTROL DEVICE, IN PARTICULAR FOR GAS-TURBINE POWER PLANTS

Gerard Greiner, Vincennes, France, assignor to Societe Nationale D'Etude Et De Construction De Moteurs D'Aviation, Paris, France

Filed Nov. 13, 1970, Ser. No. 89,408
Claims priority, application France, Nov. 14, 1969, 6939274
Int. Cl. F02c *9/04*
U.S. Cl. 60—39.28 **10 Claims**

In and for an installation supplied with liquid through a piping system, such as a gas-turbine plant supplied with fuel, a device for controlling the liquid supply as a function of an installation operating condition, such as turbine rotor speed, said device being of the kind in which fuel flow through a metering passage is regulated by a controller responsive to change in said condition, wherein in accordance with the invention separate adjusting means are provided for varying the cross-sectional area of the metering passage and for varying the liquid pressure drop therethrough, and separate controllers, one of the integrating action type and one of the proportional action type, are provided for the respective varying means.



3,695,039

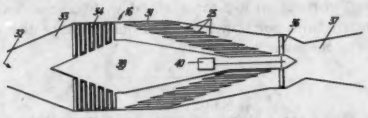
Patent Not Issued For This Number

3,695,040

AIRCRAFT POWER PLANT

Michael D. L. Mason, 5 Partridge Ave., Baguley Hall, Manchester 23, England

Filed March 17, 1970, Ser. No. 20,328
Int. Cl. G21d *5/00*; **H05b** *7/00, 7/16, 7/18*
U.S. Cl. 60—203 **8 Claims**



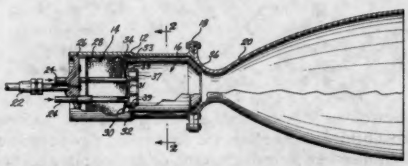
An aircraft power plant includes a nuclear reactor, a device for converting reactor heat to electricity which is used to create a silent discharge, an air-breathing engine, the ingested air being heated by being passed through said discharge, and a jet nozzle for expelling the heated air to obtain thrust.

3,695,041

TWO-STAGE HYDRAZINE ROCKET MOTOR

Robert F. Eggers, Snohomish, and Donald L. Emmons, Issaquah, both of Wash., assignors to Rocket Research Corporation, Richmond, Wash.

Filed May 8, 1970, Ser. No. 35,858
Int. Cl. F02k *3/04*
U.S. Cl. 60—264 **8 Claims**



Hydrazine is catalytically decomposed in a primary reaction chamber. During low thrust operation all of the decomposi-

tion products flow directly to the nozzle. During high thrust operation an oxidizer is reacted with a major portion of the decomposed hydrazine in the central portion of the secondary reaction chamber downstream of the primary reaction chamber. The remaining decomposed hydrazine is directed as a buffer layer along the inner surface of the secondary reaction chamber's outer wall, to serve as a coolant.

3,695,042

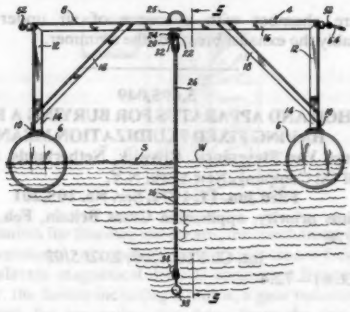
SURFACE OIL CONTAINMENT DEVICE

Cleo S. Denison, P.O. Box 5, Lynn, Ark.

Filed July 7, 1970, Ser. No. 52,899

Int. Cl. E02b *3/00, 15/04*

U.S. Cl. 61—1 F **3 Claims**



A device for containing oil spills in the open sea, comprising a plurality of hanger float structures having a continuous flexible wall or barrier suspended therefrom that encircles and contains an oil spill, the bottom edge of the wall being weighted and submerged, and the hanger float structures being connected with and held in place by spaced anchor float structures to which anchors are attached.

3,695,043

FLOAT CONTAINER FOR AN AUTOMATIC CONSTANT DOWNSTREAM LEVEL GATE

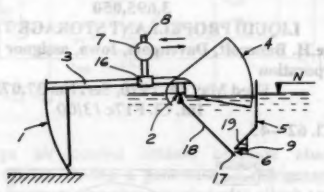
Guy Vallet, Eybens, France, assignor to Societe Generale De Constructions Electriques Et Mecaniques (Alsthom), Grenoble, France

Filed Jan. 7, 1971, Ser. No. 104,605

Claims priority, application France, Jan. 13, 1970, 7001125

Int. Cl. E02b *7/52, 7/42*

U.S. Cl. 61—22 **6 Claims**



The gate float container which is in communication with the tailrace through an opening in the bottom of such container, is provided with a slidable plate formed to enable the size of the opening to be varied to control the operation of the gate, and to enable the gate to be balanced without immersing the container in the tailrace.

3,695,044

SEALING METHOD OF SEALED SEGMENTS OF A TUNNEL

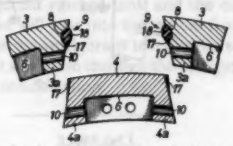
Masahiro Hoshino, 19, 2-chome, Misakicho, Sumiyoshi-ku, Osaka, and Kenkichi Sasaki, 3-58, 4-chome, Kamihozumi, Ibaragi, Osaka, both of Japan

Filed June 2, 1969, Ser. No. 829,543

Claims priority, application Japan, April 12, 1969, 44/33315

Int. Cl. E21d *11/08*

U.S. Cl. 61—42 **6 Claims**



The present invention relates to a method of sealing segments of a tunnel, wherein a groove is formed in the direction of breadth of at least one of opposite sides to be united, which are adjacent, between respective segments, which constitute an annular body as well as between respective annlar bodies in the direction of length of a tunnel, and in said groove are projectively fixed a hard elastic core materials and a soft elastic coating materials which cover the exposed side of said core materials., and said sealing materials are held between said adjacent materials, so that, by interposing and stitching sealing materials, said adjacent segments are united.

3,695,045

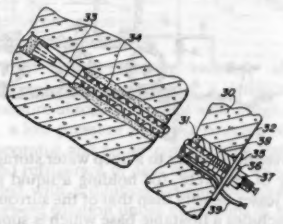
ROCK BOLTS

Chester I. Williams, 347 Greenbriar, S.E., Grand Rapids, Mich.

Filed Feb. 3, 1970, Ser. No. 8,345

Int. Cl. E21d *20/02*

U.S. Cl. 61—45 B **4 Claims**



A method of reinforcing a rock formation with rock bolts establishing a lock-in pre-stress condition inhibiting the initiation of movement of the formation, and structural features of a rock bolt assembly capable of use in the practice of the method.

3,695,046

FENDERS

Ralph P. Torr, New Malden, and Juncker Zelo Nicolaisen, Crawley, both of England, assignors to Andre Rubber Company Limited, Kingston-By-Pass Surbiton, Surrey, England

Filed Jan. 23, 1970, Ser. No. 5,430

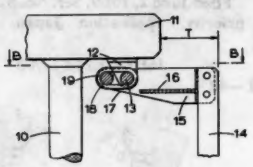
Claims priority, application Great Britain, Jan. 23, 1969, 3,862/69

Int. Cl. E02b *3/22*

U.S. Cl. 61—46 **8 Claims**

A fender arrangement for a jetty, dockside, dolphin or the like comprising a fender mounted for load-absorbing movement towards the edge of the jetty against the action of nor-

mally unstrained elastomeric tension springs in the form of endless bands looped between mounting pedestals carried by the jetty and the fender. The fender may be slender driven pil-



ing or bodily carried and guided by the jetty. Tension springs of elastomeric material show specified advantages over compression and shear springs in jetty fenders.

3,695,047

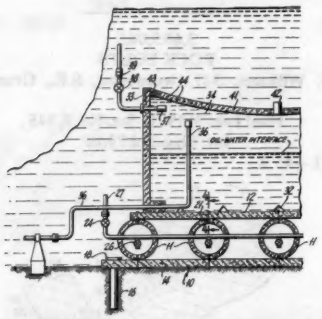
UNDERWATER LIQUID STORAGE FACILITY

Ivo C. Pogonowski, and Paul D. Carmichael, both of Houston, Tex., assignors to Texaco Inc., New York, N.Y.

Filed July 2, 1970, Ser. No. 51,792

Int. Cl. E02b *17/00*; **B65d** *89/10*

U.S. Cl. 61—46.5 **6 Claims**



The invention relates to a deep water storage facility formed primarily of concrete, for holding a liquid such as crude oil having a lesser density than that of the surrounding water. The facility includes a floatable base which is supportably fastened to a storage tank. The latter includes a support foundation having an upstanding continuous side wall defining an enclosure. A canopy fastened to the upper rim of said foundation wall thereby defines a substantially closed storage compartment. Said canopy is formed of reinforced concrete and assumes an inwardly contoured or concave shape whereby to withstand compressive stresses induced by the buoying action of stored crude oil.

3,695,048

BUOYANCE REGULATING APPARATUS FOR UNDERWATER SWIMMING

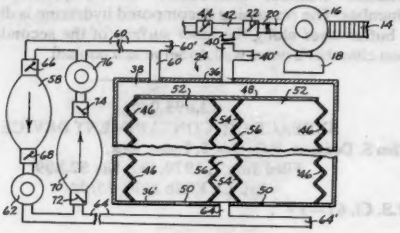
Royal H. Dimick, Rte. # 4, Box 391, Albany, Oreg.

Continuation-in-part of Ser. No. 755,211, Aug. 26, 1968, abandoned. This application Feb. 6, 1970, Ser. No. 9,281

Int. Cl. B63c *11/22*; **B63g** *8/24*; **G05d** *9/00*

U.S. Cl. 61—69 **26 Claims**

A piston, defining a part of or otherwise operatively associated with an elongated, hollow air chamber, is movable relative thereto for varying the volume of the latter, and is urged resiliently in the direction to reduce the volume of the air pressure chamber. The side of the piston opposite the air chamber is exposed to water in which a swimmer is to submerge, and a passageway communicates the interior of the air



pressure chamber with a source of air under pressure, preferably the exhaust breath of the swimmer.

3,695,049

METHOD AND APPARATUS FOR BURYING A PIPELINE HAVING FIXED FLUIDIZATION MEANS

Johannes Van Steveninck, Rijswijk, Netherlands, assignor to Shell Oil Company, New York, N.Y.

Filed Jan. 11, 1971, Ser. No. 105,201

Claims priority, application Great Britain, Feb. 11, 1970, 6,559/70

Int. Cl. F16l *1/00*; **E02f** *5/02*

U.S. Cl. 61—72.4 **10 Claims**

A pipeline having fluidization pipes provided with fluidization nozzels running along the pipeline and secured thereto. To bury the pipeline in the unconsolidated bottom of a body of water such as the seabed, the pipeline is laid on the seabed and water is pumped into the fluidization pipes; the water leaves the fluidization nozzels and fluidizes the seabed along the pipeline causing the pipeline together with the fluidization pipes to sink into the fluidized seabed.

3,695,050

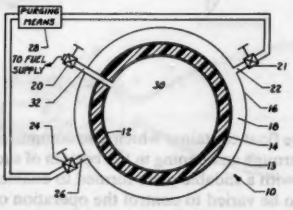
LIQUID PROPELLANT STORAGE TANK

George H. Bancroft, Davenport, Iowa, assignor to The Bendix Corporation

Filed May 14, 1970, Ser. No. 37,072

Int. Cl. F17c *13/00*

U.S. Cl. 62—45 **8 Claims**



A multi-layer insulated tank for storing a liquid propellant. A tank is coated with a low thermal conductive gas expanded

foam. The foam coated tank is encased in a plastic bag and is maintained under a low thermal conductive gas until just before the tank is charged with the liquid propellant. Just prior to charging the tank with cryogen, the low thermal conductive gas is replaced by helium or nitrogen depending upon the cryogen to prevent condensation of water vapor and/or purge gas on the outer surface of the tank.

3,695,051

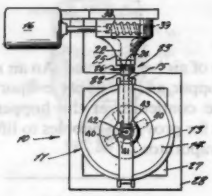
AUTOMATIC ICE CREAM FREEZER

William B. Hunt, Rte. # 2, Wickliffe, Ky.

Filed June 10, 1970, Ser. No. 44,989

Int. Cl. F25c *7/10*

U.S. Cl. 62—136 **1 Claim**



A mechanism for freezing ice cream, the mechanism including a conventional, manually operated ice cream freezer to which an electro magnetical drive is connected for powering the freezer, the device including a motor, a gear reduction and a nail clutch for separating the drive from the ice cream freezer after the ice cream has become sufficiently solidified.

3,695,052

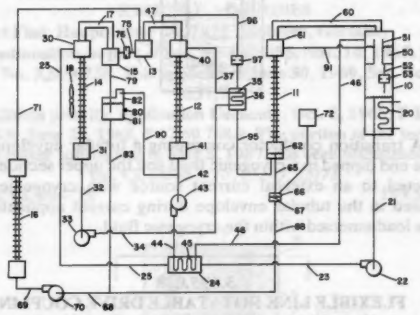
CONCENTRATION CONTROL FOR MULTIPLE STAGE ABSORPTION REFRIGERATION SYSTEMS

Charles K. Griffin, Auburn, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed July 28, 1971, Ser. No. 166,914

Int. Cl. F25b *15/06*

U.S. Cl. 62—101 **5 Claims**



A two-stage air cooled lithium bromide absorption refrigeration system having a generator, a refrigerant condenser, a high pressure absorber coupled with a high temperature evaporator, a low pressure absorber coupled with a low temperature evaporator and an air conditioning fan coil unit for passing cooled refrigerant in heat exchange with ambient air is provided with a concentration control system for automatically diluting the absorbent solution under conditions of either low ambient temperatures or an inadequately purged low pressure absorber. The concentration control includes a refrigerant storage tank connected directly to the refrigerant condenser. Intermediate strength absrobent solution discharged from the low pressure absorber is passed through a heat exchanger in the refrigerant storage tank, in heat exchange relation with refrigerant therein, to the high pressure absorber. A refrigerant overflow passage is provided from a refrigerant sump to a location containing absorbent solution. Ambient air passes serially over the low pressure absorber and then over the refrigerant condenser so that when the low pressure absorber is poorly purged or the ambient air temperature is relatively low, these events will be reflected by a drop in the intermediate solution temperature passing through the refrigerant storage tank and a simultaneous drop in the condensing temperature. Consequently, the difference in pressure between the refirgerant storage tank and the condenser will drop and refrigerant will pass into the system from the storage tank and will cause the refrigerant level in the sump to overflow into absorbent soulution through the refrigerant overflow passage to prevent solidification.

3,695,053

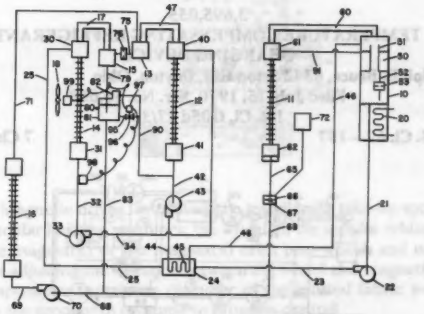
DILUTION SYSTEM FOR ABSORPTION REFRIGERATION SYSTEMS

Charles K. Griffin, Auburn, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed July 28, 1971, Ser. No. 16,689

Int. Cl. F25b *15/06*

U.S. Cl. 62—103 **4 Claims**



A two-stage air cooled lithium bromide absorption refrigeration system having a generator a refrigerant condenser, a high pressure absorber coupled with a high temperature evaporator, a low pressure absorber coupled with a low temperature evaporator and an air conditioning fan coil unit for passing cooled refrigerant in heat exchange with air to be cooled is provided with a dilution system for automatically diluting the absorbent solution under conditions of either low ambient temperatures or an inadequately purged low pressure absrober. The dilution system includes a refrigerant sump connected by a dilution passage to a location containing absorbent solution. When the low pressure absorber is poorly purged, the difference in temperature between the intermediate solution and the abmibent air will be reduced. When this difference in temperature is less than a predetermined difference, a value in the dilution passage is opened to pass refrigernat from the sump to the location containing absorbent solution to dilute the solution.

3,695,054

CONTROL CIRCUIT FOR AN AIR CONDITIONING SYSTEM

Vincent T. Barry, Camillus, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

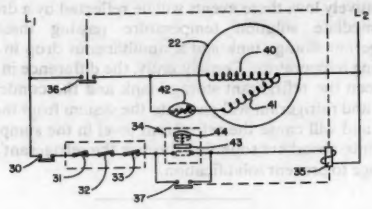
Filed May 25, 1971, Ser. No. 146,719

Int. Cl. F25b *1/00*; **G05b** *5/00*

U.S. Cl. 62—115 **10 Claims**

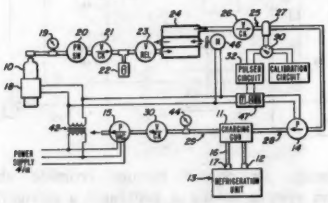
An air conditioning system is provided to supply treated air to an area. The system includes a refrigeration unit comprising a motor-driven compressor, a condenser, an evaporator, and

expansion means. The motor includes a run winding and a start winding connected in parallel. The start winding has a positive temperature coefficient thermistor connected in series therewith to interrupt operation of the start winding after the motor has reached its operating speed. A bimetallic switch responsive to the temperature of the thermistor is actuated



thereby. During normal operation, a bypass circuit about the bimetallic switch prevents the switch from having any effect on the operation of the compressor motor. When the compressor motor is deenergized, the bypass becomes ineffective. The switch, which has been opened by the temperature of the thermistor, prevents reenergization of the compressor motor until a predetermined period of time has elapsed.

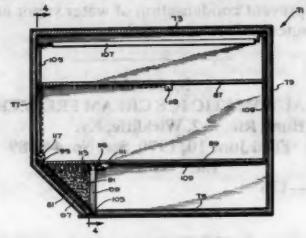
3,695,055
TEMPERATURE COMPENSATING REFRIGERANT CHARGING DEVICE
Ralph E. Bruce, 6342 Seton Hill, Dayton, Ohio
Filed July 15, 1970, Ser. No. 55,059
Int. Cl. G05d *23/32*
U.S. Cl. 62—157 **7 Claims**



A temperature compensating refrigerant charging device and refrigeration servicing unit comprising a volumetric refrigerant flow establishing unit such as a volumetric charging pump controlled by a temperature-responsive timer assembly comprising a thermistor-controlled, pulser-actuated counter which may be pre-set for the desired weight of the refrigerant to be placed in a refrigeration unit. When the temperature of the refrigerant entering the pump is relatively low and its density correspondingly high, the thermistor resistance changes to increase the pulsing rate of the pulser and cause the counter to reach shutoff position in less time. When the temperature of the refrigerant is relatively high, the thermistor resistance change causes the pulser to discharge at a slower rate thereby increasing the time it takes the counter to reach shutoff position and allowing the pump to complete more cycles and to introduce a larger volume of the less dense refrigerant into the system.

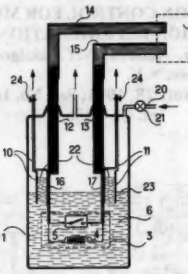
3,695,056
CARBON DIOXIDE REFRIGERATION SYSTEMS
Emmett P. Glynn, Lemont, and Howard L. Hsu, China, both of Ill., assignors to Liquid Carbonic Corporation, Chicago, Ill.
Filed Aug. 26, 1970, Ser. No. 66,961
Int. Cl. F25d *3/12*
U.S. Cl. 62—168 **7 Claims**

Refrigeration apparatus utilizing solid carbon dioxide as a refrigerant comprising a pair of refrigeration compartments, a solid carbon dioxide hopper defined by a pair of hollow condensers arranged in the shape of a V for a circulating heat-exchange fluid. A pair of evaporators vertically below the hopper and defining a chimney between the compartments for



the circulation of air being cooled. An air cargo container having a lower hopper and an upper evaporator. In the conduit connecting the condenser at the hopper to the evaporator there is means for providing bubbles to lift the heat exchanger liquid to the evaporator.

3,695,057
CRYOSTAT CURRENT SUPPLY
Francois Moisson-Franckhauser, Bretigny-sur-Orge, France, assignor to Compagnie Generale D'Electricite, Paris, France
Filed Sept. 30, 1970, Ser. No. 76,926
Claims priority, application France, Sept. 30, 1969, 6933345
Int. Cl. F25b *19/00*
U.S. Cl. 62—514 **4 Claims**



A transition conductor comprising a tubular envelope has one end dipped in a cryogenic fluid and the upper section connected to an external current source with cryogenic fluid raised in the tubular envelope during current application to the load emersed within the cryogenic fluid.

3,695,058
FLEXIBLE LINK ROTATABLE DRIVE COUPLING
Marvin W. Keith, Jr., 1623 South Blvd., Evanston, Ill.
Filed May 26, 1971, Ser. No. 147,104
Int. Cl. F16d *1/10*
U.S. Cl. 64—23 **5 Claims**

A flexible link coupling for transmitting rotational movement includes a flexible flat link of trapezoidal configuration

having its narrow end pivotally connected to a driven member by a transverse pin and its wide end slidably received diagonally within an elongate square hole in a driving member. This coupling accommodates both angular misalignment and relative axial movement while transmitting rotational movement from the driving member to the driven member.

3,695,059

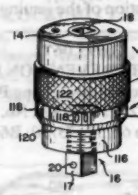
ADJUSTABLE TORQUE LIMITING COUPLING

Wilburn B. Laubach, 5718 Wellington Drive, Austin, Tex.

Filed Jan. 14, 1971, Ser. No. 106,348

Int. Cl. F16d *7/06*

U.S. Cl. 64—29 **15 Claims**



An adjustable torque limiting coupling including a driving member, a driven member, an intermediate member and a housing for the driving, driven and intermediate members. The intermediate member is coupled with the driven member so as to accommodate relative axial motion and prevent relative rotation between the driven member and the intermediate member. The intermediate member includes a disc like portion having a plurality of pairs of radially disposed, diametrically opposed recesses in the face of the disc like portion for engaging in yieldable driving relationship a member projecting from the driving member. Adjustable spring means is provided for urging the recesses and projecting member into yieldable driving relationship, and means for adjusting the spring means and locking the adjustment of the spring means is provided.

3,695,060

APPARATUS FOR CONTROLLING THE JACKS OF KNITTING MACHINES

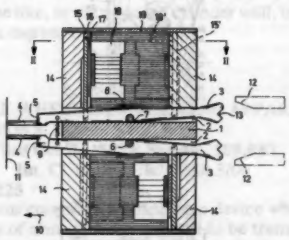
Karl Flad, Hauptstrasse 29, 7411 Undingen, Germany

Continuation-in-part of Ser. No. 682,856, Nov. 14, 1967, Pat. No. 3,509,738. This application June 30, 1969, Ser. No. 837,741

Claims priority, application Germany, Oct. 2, 1968, P 18 00 568.0; June 29, 1968, P 17 60 768.0. The portion of the term of this patent subsequent to May 5, 1987, has been disclaimed.

Int. Cl. D04b *7/28, 15/70, 15/78*

U.S. Cl. 66—75 **19 Claims**



In a knitting machine, such as a Jacquard controlled knitting machine, in which the needles are selected by means of pivotal plates which are mounted on a reciprocatory plate bed and which are actuated by electromagnetic means energized in accordance with information stored in an information carrier, at least some of the parts cooperating with the electromagnetic means to effect selection of the needles are arranged to be temporarily demagnetized before the plates are released for return to their rest position.

3,695,061

Patent Not Issued For This Number

3,695,062

MAGNET DRIVE FOR TAKE UP SPOOL SPINDLE IN CIRCULAR KNITTING MACHINES

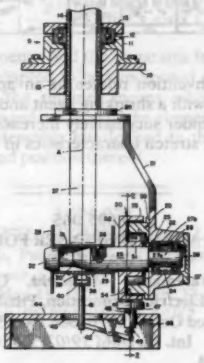
Kurt Schaack, Lenneper Str. 40, Wuppertal, Germany

Filed June 22, 1970, Ser. No. 48,380

Claims priority, application Germany, June 28, 1969, P 19 32 944.3

Int. Cl. D04b *15/88*

U.S. Cl. 66—151 **10 Claims**



Magnetic drives for turning the spindle of a take-up spool in circular knitting machines; the wheel on the spindle orbits past the magnet(s) or the magnet(s) orbit past wheel; and means for adjusting the distance between the wheel and magnet(s) in response to increasing diameter of the knitted fabric wound on the spool or in response to program control.

3,695,063

KNITTING METHOD AND KNITTED GARMENT

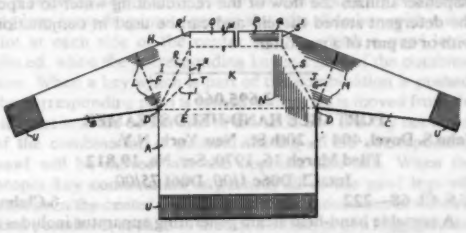
Max William Betts, Coventry, and Frank Robinson, Borrowash, both of England, assignors to Courtaulds Limited, London, England

Filed Oct. 9, 1970, Ser. No. 79,545

Claims priority, application Great Britain, Oct. 13, 1969, 53470/69

Int. Cl. D04b *7/10*

U.S. Cl. 66—176 **7 Claims**



A method of machine knitting a garment blank includes knitting a tube having portions constituting portions of sleeves and body of the garment located between the underarm region and neck of the garment and knitting an extension for each sleeve integral therewith, each extension constituting a shoulder portion of the garment and having edges arranged to be joined to the upper edges of the said single knitted tube.

3,695,064

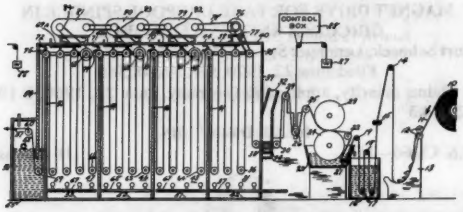
IMPARTING STRETCH CHARACTERISTICS TO WOVEN FABRICS

Leslie A. Runton, Middle Haddam, Conn., assignor to J. P. Stevens & Co., Inc., New York, N.Y.

Division of Ser. No. 387,101, Aug. 3, 1964, Pat. No. 3,528,763. This application May 25, 1970, Ser. No. 48,673

Int. Cl. D06c *1/00, 3/00*

U.S. Cl. 68—5 E **2 Claims**



The present invention relates to an apparatus wherein a fabric is treated with a shrinking agent and then led through a series of zones under successively increasing warp tension to thereby produce stretch characteristics in the fill direction of the fabric.

3,695,065

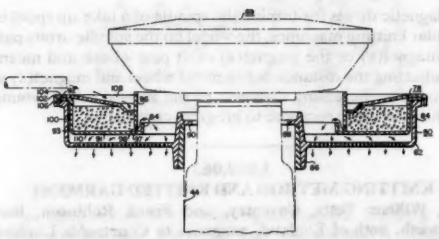
LAUNDRY AGENT DISPENSER FOR AGITATOR WASHERS

William A. Wasemann, Mansfield, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Oct. 8, 1970, Ser. No. 79,181

Int. Cl. D06f *39/02, 39/10*

U.S. Cl. 68—17 A **8 Claims**



A dispenser mounted on the center post of an automatic washing machine for dispensing a granulated or powdered laundering agent automatically during a wash cycle subsequent to an initial pre-soak cycle of any duration. The dispenser utilizes the flow of the recirculating water to expel the detergent stored therein and can be used in conjunction with or as part of a pan filter.

3,695,066

PORTABLE HAND-HELD STEAMER

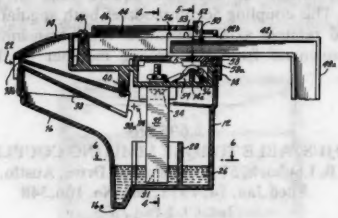
John S. Doyel, 404 N. 20th St., New York, N.Y.

Filed March 16, 1970, Ser. No. 19,812

Int. Cl. D06c *1/00;* **D06f** *75/00*

U.S. Cl. 68—222 **6 Claims**

A portable hand-held steam generating apparatus includes a permanently sealed housing in which a quantity of water is disposed, the housing being shaped such that it contains the quantity of water in any portion taken about and through the center of the housing. Steam is produced by heating water in the lower portion of the housing using a pair of spaced, heat-conducting electrodes that are water-activated. From the center of the housing, a nozzle, having greater cross-sectional area at its intake end than at its discharge end in order to increase steam pressure, directs steam toward a surface to be treated. A handle for the apparatus is slidable from a position



within the housing to an extended position where it may be used to control the direction of the issuing steam.

3,695,067

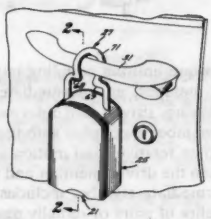
CAR THEFT PREVENTION DEVICE

Robert D. Bays, 3518 Stevely Ave., Long Beach, Calif.

Filed June 29, 1970, Ser. No. 50,541

Int. Cl. F05b *65/52, 73/00;* **B65d** *55/14*

U.S. Cl. 70—63 **5 Claims**



A car theft prevention device for locking a car key to the exterior door handle of a car so a number of authorized persons may have access thereto. The device includes a housing formed with an open chamber for receiving the key and including shackle-receiving means. A cover is provided for securement to the housing to close the chamber.

3,695,068

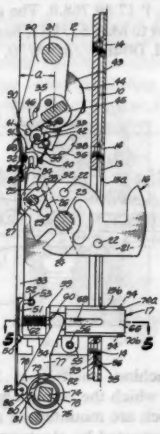
NARROW STILE LATCH-LOCK STRUCTURE

Charles L. Eads, Palm Springs, Calif., and Harry D. Brotman, Hollywood, Calif., assignors to Adams Rite Manufacturing Company, Glendale, Calif.

Filed July 13, 1970, Ser. No. 54,487

Int. Cl. E05b *59/00*

U.S. Cl. 70—107 **13 Claims**



An improved combination locking and latching assembly for mounting between the side faces of a narrow tubular stile

frame member of a door to provide both locking and latching operations, respectively, by means of a locking bolt and a latch member, and wherein the latch member is spring urged to a latched position and is independently operable by a latch handle to an unlatched position, while the locking bolt is arranged to be actuated in a normal manner being further operable, in an unlocked position of the locking bolt, to move the latch member to a retracted or unlatched position.

3,695,069

Patent Not Issued For This Number

3,695,070

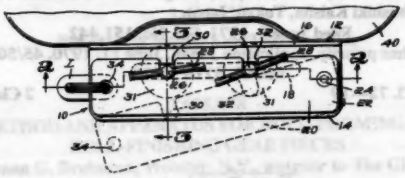
LOCKING CLAMP

Philip J. Desroches, West Yarmouth, Mass., assignor to Universal Saddle Hanger, Inc., West Harwick, Mass.

Filed Oct. 15, 1970, Ser. No. 80,996

Int. Cl. B65d *55/14*

U.S. Cl. 70—164 **6 Claims**



The present invention relates to a novel and improved locking device and preferably a detachable or removable locking device for locking the fuel or lubricating systems of heavy duty construction equipment. The present device comprises an L-shaped body member having a base portion and an integral upstanding leg portion. An elongated slot is provided in the base portion thereof arranged to receive the stems and handles of the oil fill and dip stick of a bulldozer. A separate locking bar having cutout portions coinciding with the stems is pivotally mounted at one end of the member and is arranged to slide into and out of engagement with the bar to position the cutout portions in locking position relative to the oil fill and dip stick stems. Means is provided for securing the base member and locking bar in position whereby the caps for the oil fill and dip stick cannot be removed.

In a modified form of the invention, a locking device for the fuel fill caps of heavy duty construction equipment is provided and comprises a hollow, cylindrical body member arranged to fit over and surround the cap and filling spout and be welded to the tank. A locking bar pivotally mounted on one side of the cylinder wall is arranged to extend across a cutout in the open end of the cylinder and to be locked in place by means of a padlock, or the like, to the opposed cylinder wall, thus making removal of the cap impossible.

3,695,071

VEHICLE WHEEL IMMOBILIZING APPARATUS

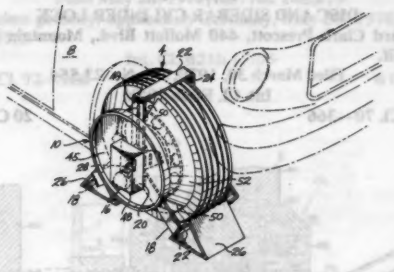
Jon R. West, 6835 S. 262nd., Kent, Wash.

Filed Oct. 14, 1971, Ser. No. 189,087

Int. Cl. B60r *25/00*; **B60t** *3/00*

U.S. Cl. 70—225 **20 Claims**

The apparatus comprises a wheel stop device which in turn has a plurality of arms that are adapted to be transversely arranged about a common center line, in angularly spaced relationship to one another, and which are equipped with gripper elements on the relatively outlying end portions thereof, for engagement about the periphery of the wheel, on each side thereof, when the device is applied to the wheel, on one side thereof, such that the center line of the arms extends adjacent the axis of the wheel on a parallel thereto. The arms are interconnected and fixed against relative rotation about the line, by means which enable at least one of the arms to be reciprocated in the transverse plane thereof, for purposes of engaging and disengaging the gripper elements with respect to the wheel. There are, however, retainer means on the device for securing the one arm against reciprocation, in the engaged



position of the elements; and the apparatus further comprises a shield which is adapted to be superposed on the device to present across to the retainer means when the arms are disposed in the engaged position of the elements. The shield in turn is normally releasably interlocked to the device, in the relatively superposed position thereof.

3,695,072

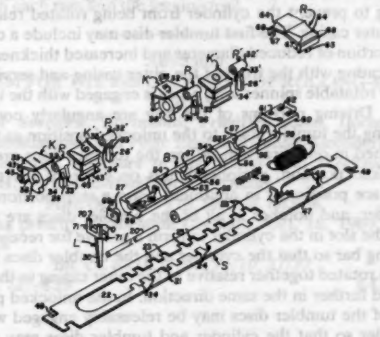
PUSHBUTTON COMBINATION LOCKS

Kenneth A. Milette, Pasadena, Calif., assignor to Samsonite Corporation, Denver, Colo.

Filed May 15, 1970, Ser. No. 37,525

Int. Cl. E05b *37/02, 65/52*

U.S. Cl. 70—312 **13 Claims**



A series of keys partially encircle corresponding pawls having legs extending into a center slot of a slide bar, with a side slot at each side of the center slot, in which a pawl leg is placed, when the corresponding key is a part of the combination. When a key which is part of the combination is pushed, the corresponding pawl is turned, and its leg is moved from the side slot into the center slot of the slide bar. If a key not a part of the combination is pushed, the leg of the corresponding pawl will be moved into the opposite side slot. When the proper key combination is pushed, all of the pawl legs will then be in the center slot of the side bar, movement of which is then permitted, such as to unlock a catch, as of a luggage case. The keys are placed in pairs along a rocking bar, which is rocked by a restore key mounted thereon in alignment with the pawl keys, so as to move the down keys to an up position, or to move the keys of the combination to an up position, when pushed downwardly for setting the combination. For the latter purpose, the pawls are movable simultaneously by a lever, such as accessible on the inside of the luggage case, to move projections on the pawls away from dual sets of slots in

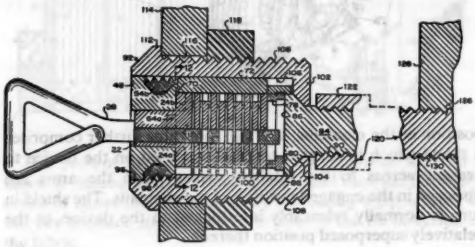
the corresponding keys and permit the pawls to be returned, after the keys forming the combination are pushed down. The lock is particularly adapted to be installed between the pivoted ends of the handle of a luggage case.

3,695,073

DISC AND SIDEBAR CYLINDER LOCK

Burnerd Clark Prescott, 440 Moffett Blvd., Mountain View, Calif.

Filed March 30, 1970, Ser. No. 23,554
Int. Cl. E05b *29/00*
U.S. Cl. 70—366 **20 Claims**



Tumbler discs are supported within a cylinder for rotation therein between locked and unlocked positions. The cylinder itself is rotatably supported within an outer casing into which it may be loaded from the front and held in place by a hidden externally-threaded collar. When the tumbler discs are in the locked position, they support a locking bar in engagement with a slot in the cylinder and an aligned groove in the outer casing to prevent the cylinder from being rotated relative to the outer casing. The first tumbler disc may include a concentric portion of reduced diameter and increased thickness communicating with the front of the outer casing and serving as a freely rotatable spinner until a key is engaged with the tumbler discs. Driving portions of the key are angularly coded for rotating the tumbler discs to the unlocked position as the key is turned in one direction. When the tumbler discs are in the unlocked position, peripheral lugs on some of the tumbler discs are positioned in abutment upon a stop portion of the cylinder, and notches in all of the tumbler discs are aligned with the slot in the cylinder to form a groove for receiving the locking bar so that the cylinder and the tumbler discs may be freely rotated together relative to the outer casing as the key is turned further in the same direction. In the unlocked position one of the tumbler discs may be releasably engaged with the cylinder so that the cylinder and tumbler discs may also be freely rotated together relative to the outer casing as the key is turned in the opposite direction. This same tumbler disc may be disengaged from the cylinder under control of the key. A locking member protruding through an opening in the rear of the outer casing is rotatably driven by the cylinder to lock and unlock a structure in which the outer casing is embedded.

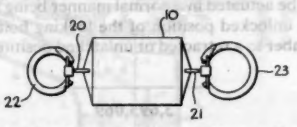
3,695,074

KEY CONNECTOR

James A. Smyth, Wilcox, and William T. Whitaker, Bradford, both of Pa., assignors to Zippo Manufacturing Company, Bradford, Pa.

Filed June 1, 1971, Ser. No. 148,688
Int. Cl. A47g *29/10*
U.S. Cl. 70—456 R **7 Claims**

A detachable key connector has a socket element and a detachably connectible part which slides into the socket member. The socket member consists of a relatively flat tube having a plate fixed in one end thereof, with the inner edge of the plate formed to provide an undercut recess. A U-shaped spring has its base portion disposed in the undercut recess and includes converging leg portions. The detachably connectible



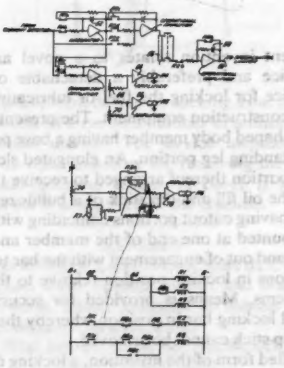
part comprises a flat plate having a bulbous nose portion which snaps releasably between the convergent leg portions of the spring member.

3,695,075

CORRECTION SYSTEM FOR CONTINUOUS ROLLING MILL

Nobuo Kubota, Kobe, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed June 9, 1971, Ser. No. 151,442
Claims priority, application Japan, June 11, 1970, 45/50439
Int. Cl. B21b *37/00*
U.S. Cl. 72—19 **2 Claims**



In a tandem mill a roll current for a first mill stand is measured after a workpiece has entered only the first stand and after it has also entered a second stand. A difference between the measured currents predicts a speed correction factor for the second stand by which the speed of the second stand is modified. Then the roll current for the first stand is again measured and the speed of the second stand is adjusted so as to put a difference between the first and third measured current within predetermined limits. Otherwise, the above process is repeated until a difference between the first and last measured currents is put in the limits. The last speed correction factor determined is stored in a computer.

3,695,076

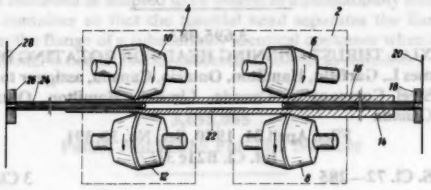
METHOD FOR MANUFACTURE OF SEAMLESS TUBE

Friedrich Kocks, Freiglgrathstrasse 1, 4 Dusseldorf, Germany

Filed Nov. 27, 1970, Ser. No. 93,014
Claims priority, application Germany, Dec. 2, 1969, P 19 60 328.2
Int. Cl. B21b *17/08*
U.S. Cl. 72—97 **10 Claims**

A method of manufacturing seamless tubing from a tubular bloom is provided in which the bloom is reduced on a mandrel

or like rod in a first skew rolling mill inserted into the bloom, and the tube issuing from the first skew mill is immediately



rolled in a continuous manner on a mandrel or like rod in a second skew mill directly contiguous to the first skew mill.

3,695,077

Patent Not Issued For This Number

3,695,078

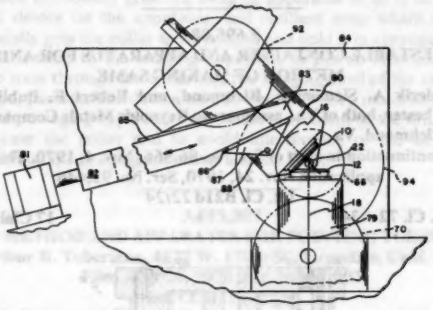
METHOD AND APPARATUS FOR ROLL-FORMING OR ROLL-FINISHING GEAR PIECES

Norman G. Bruinsma, Webster, N.Y., assignor to The Gleason Works, Rochester, N.Y.

Filed Nov. 16, 1970, Ser. No. 89,916

Int. Cl. B21h *5/04*

U.S. Cl. 72—101 **19 Claims**



A method for forming or finishing gear tooth configurations on a workpiece provides for a rolling together of a die member and a workpiece with a feed motion which essentially pivots about and axis substantially coincident with a common normal to the center axes of rotation of both the die member and the workpiece. The pivotal feed motion is continued so as to progressively engage the die member and the workpiece with each other to a desired limit depth which forms gear tooth configurations on the workpiece.

A machine for rolling together a die member and a workpiece to form a gear tooth configurations on the workpiece, including means for mounting and rotating the die member relative to the workpiece so that there is provided a pivotal feed motion about an axis substantially coincident with a common normal to the center axes of both the die member and the workpiece.

3,695,079

MEANS FOR FORGING LARGE SHELL RINGS E. G. FOR BOILER SHELLS

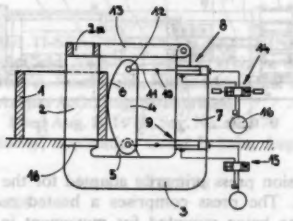
Willy Muller, Dusseldorf-Gerresheim, Germany, assignor to Schloemann Aktiengesellschaft, Dusseldorf, Steinstrasse, Germany

Filed May 28, 1971, Ser. No. 148,079

Claims priority, application Germany, May 30, 1970, P 20 26 637.9

Int. Cl. B21b *17/06*

U.S. Cl. 72—208 **6 Claims**



The forging of large shell rings, particularly for boilers, gives difficulty, but it is desirable to forge the rings in one piece. My invention provides apparatus suitable for forging such large rings, having a vertical mandrel which projects up the inside of the ring and a forging tool which works on the outside of the ring, against the counter-pressure of the mandrel. The forging tool has a generally vertical, arcuate forging surface and the forging tool executes a rocking movement during forging. The tool is driven by at least two hydraulic rams arranged one above the other, there being at least one pivotal connection between each ram and the forging tool.

3,695,080

SYSTEM FOR THE REPLACEMENT OF ROLLING-MILL ROLLS

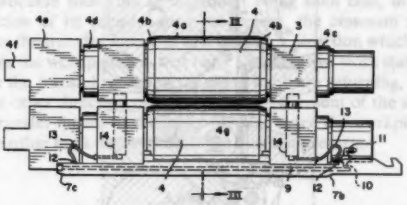
Theodor Sevenich, Dortmund; Friedrich Zahn, Dortmund-Kleinholthausen, and Peter Zens, Dortmund-Kirchderne, all of Germany, assignors to Maschinen- und Werkzeugbau GmbH, Dortmund-Hombruch, Germany

Filed Oct. 14, 1970, Ser. No. 80,666

Claims priority, application Germany, Oct. 18, 1969, P 19 52 646.6

Int. Cl. B21b *31/08, 31/10, 31/32*

U.S. Cl. 72—239 **6 Claims**



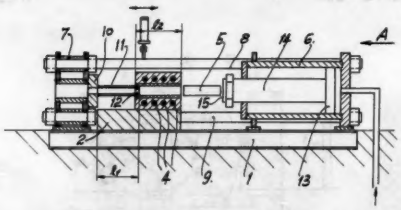
A pair of rolling-mill rolls, to be replaceably inserted in a rolling-mill stand, is mounted upon a skid carried parallel to the rolling direction and shiftable bodily in the horizontal transverse direction to carry the rolls into the stand. The members of the skid are provided with hydraulic ducts connected to positioning cylinders on the lower roll for spacing the rolls apart.

3,695,081

EXTRUSION PRESS FOR THE MANUFACTURE OF LIGHT METAL PROFILES

Karl Gartner, Gartnerstrasse 8, Gundelfingen, Danube, Germany

Filed July 20, 1970, Ser. No. 56,384
Claims priority, application Germany, July 26, 1969, P 19 38 024.6
Int. Cl. B21c 23/00, 27/00
U.S. Cl. 72—254 5 Claims



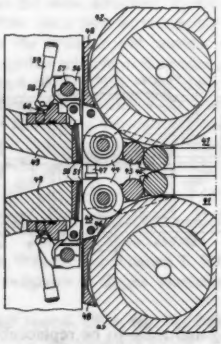
An extrusion press primarily adapted for the handling of light metal. The press comprises a heated receptacle for blanks, same being mounted for movement in a direction parallel to the direction of extrusion, together with a hollow shaft onto which the receptacle moves during extrusion operation. The extrusion die is placed at the end of the shaft toward the receptacle so that the movement above mentioned drives the extrudable material within the receptacle through the die and exits same through the hollow shaft. A double acting pressure cylinder and piston actuates a piston rod which bears against the receptacle for effecting said movement thereof. A quick acting connector is provided for connecting the piston rod to the receptacle for retracting same to the initial position after the completion of an extrusion operation. Further retraction of only the piston rod then provides sufficient space between the end of said piston rod and the end of said receptacle to guide a cut off knife therebetween for shearing residue from the die.

3,695,082

MULTI-ROLL STANDS

Klaus Leifeld, Kaarst; Josef Wochnik, Osterath, and Erich Stoy, Dusseldorf, all of Germany, assignors to Schloemann Aktiengesellschaft, Dusseldorf, Germany

Division of Ser. No. 647,451, June 20, 1967, Pat. No. 3,546,914. This application May 14, 1970, Ser. No. 37,105
Int. Cl. B21b 31/16
U.S. Cl. 72—243 4 Claims



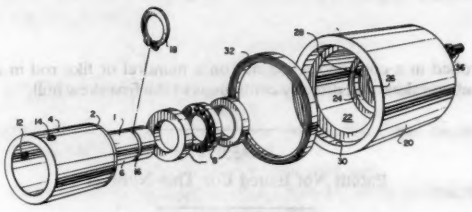
A multi-roll stand provided with two positively driven backing rolls and two working rolls frictionally driven by the backing rolls, in which the working rolls are displaced, for their horizontal support, with their axes out of the vertical plane containing the axes of the backing rolls, and intermediate rolls and supporting rollers journalled in supporting bridges provide further horizontal support for the working rolls. Means are provided for adjusting the lateral distance of the individual supporting rollers from the plane containing the axes of the backing rolls.

3,695,083

AXIAL THRUST SPINNING HEAD FOR ROTATING DIES

James L. Garfield, Hamilton, Ontario, Canada, assignor to The Steel Company of Canada, Limited, Hamilton, Ontario, Canada

Filed April 21, 1970, Ser. No. 30,391
Int. Cl. B21c 3/12
U.S. Cl. 72—285 3 Claims



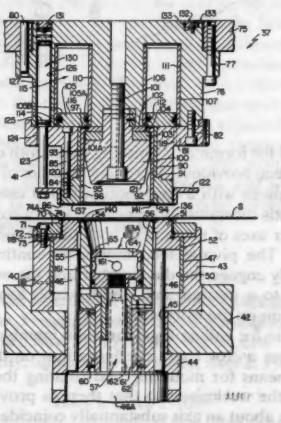
A spinning head for wire drawing die is disclosed. The die head or die holder comprises of a spinner housing having on its inner surface a bearing surface and a spinner head adapted to fit into the spinner housing. The head has on its outer surface a bearing surface and is adapted to retain a die. An axial thrust bearing is positioned between the housing and the head on the two bearing surfaces and the axial thrust bearing enables the head to spin relative to the housing. The spinning head is provided with means for retaining the spinner head within the spinner housing and means to permit the feeding of lubricant to the axial bearing.

3,695,084

NESTABLE CONTAINER AND APPARATUS FOR AND METHOD OF MAKING SAME

Frederik A. Siemonsen, Richmond, and Robert F. Bublitz, Chester, both of Va., assignors to Reynolds Metals Company, Richmond, Va.

Continuation-in-part of Ser. No. 86,866, Nov. 4, 1970. This application Nov. 24, 1970, Ser. No. 92,446
Int. Cl. B21d 22/24
U.S. Cl. 72—348 17 Claims



A nestable container and an improved apparatus for and method of making same are provided wherein a blank is drawn

to define a drawn container which is reverse redrawn to form the nestable container which has a side wall and an annular planar flange extending therefrom with a toroidal bead extending from the flange and having at least a portion thereof arranged within and beneath the peripheral edge of the flange. The container is adapted to be nested in a substantially identical container so that the toroidal bead separates the flange from the flange of a substantially identical container when the container is nested in the substantially identical container.

3,695,085

Patent Not Issued For This Number

3,695,086

LOCKBOLT SWAGING APPARATUS

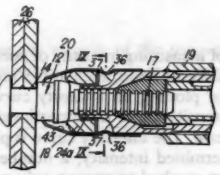
Donald Stanley Savage, St. Albans, England, assignor to Aerpat A.G., Zug, Switzerland

Filed Sept. 22, 1970, Ser. No. 74,254

Claims priority, application Great Britain, Sept. 26, 1969, 47,526/69

Int. Cl. B21d *9/05*

U.S. Cl. 72—391 **12 Claims**



A device to facilitate the placing of lockbolt type fasteners by means of apparatus which swages a lockbolt collar onto the grooved stem of a lockbolt pin has a resilient body portion which frictionally grips the swaging apparatus so as to mount the device on the apparatus, and resilient arms which frictionally grip the collar to be swaged and hold it in appropriate relationship to the swaging apparatus to permit insertion of the stem through the collar and the swaging anvil of the swaging apparatus. The device may co-operate with a movable part of the swaging apparatus to produce movement of the arms to release the collar and to avoid interference of the device between the swaging apparatus and the work.

3,695,087

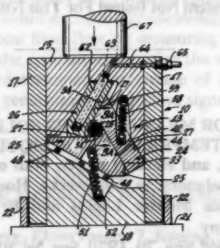
METHOD AND APPARATUS FOR POINTING TUBES

Arthur H. Tuberman, 4527 W. 170th St., Lawndale, Calif.

Filed Aug. 26, 1970, Ser. No. 67,007

Int. Cl. B21d *41/04*

U.S. Cl. 72—402 **16 Claims**



Method and apparatus for forming a generally cylindrical point on a tube by first flattening the tube from at least three sides to a polygonal cross section while forming curved sections between the flat sides, and then progressively contracting the tube to bring the curved sections together while buckling the flat sides inwardly into loops that are flattened inside the point. At least three die shoes arranged around a die recess in alternately overlapping relation have flat inner faces with an elongated lip along one side for shaping the curved sections, and also have flat, inclined bevels for shaping the transition zone of the tube during pointing, each bevel having a part-conical lip on one side for the final shaping of the transition zone to a conical shape. One actuating arrangement utilizes a mutual camming action to move all die shoes simultaneously at the same rate to maintain the point on a preselected axis, while a simpler form displaces the axis during pointing.

3,695,088

MULTI-STAGE FORMING MACHINE

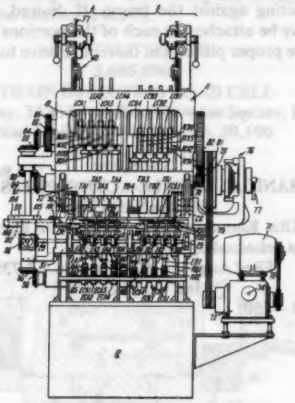
Zia R. Alvi, Hatfield; Victor L. Heslop, Welwyn Garden City, and Frederick A. Summerlin, Harpenden, all of England, assignors to Aerpat A.G., Zug, Switzerland

Filed Aug. 5, 1970, Ser. No. 61,070

Claims priority, application Great Britain, Aug. 15, 1969, 40,844/69

Int. Cl. B21j *9/18*

U.S. Cl. 72—405 **1 Claim**



A machine for cold forming workpieces in which workpieces are subjected to a sequence of work operations performed by a bank of co-operating tools and dies, therebeing transfer means for transferring each workpiece through successive work stations in the bank so as to be subjected sequentially to the action of successive co-operating tools and dies. The machine has two such banks operating 180° out of phase and the transfer means of both banks are carried by a common reciprocable slide, the arrangement being such that, in one direction of its reciprocating movement, the common slide moves the transfer means of one bank in a direction which advances the workpieces in that bank to successive work stations while the transfer means of the other bank are returning, and, in the other direction of reciprocating movement of the slide, the transfer means of the other bank advance the workpieces in the other bank while those of the one bank return.

3,695,089

ELECTROMAGNETIC RIVETING MACHINE

William C. Seekins, Los Angeles, Calif., assignor to Hughes Tool Co., Aircraft Division, Culver City, Calif.

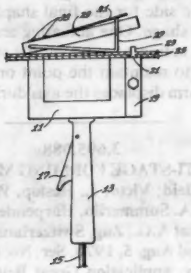
Filed April 8, 1970, Ser. No. 26,582

Int. Cl. B21j *15/24*

U.S. Cl. 72—430 **5 Claims**

An electromagnetic riveting machine comprising a hand-held selectively actuatable electromagnet having means to support a rivet relative to a striker bar positionable on the opposite side of the workpiece from the electromagnet. The

striker bar comprises a metal bar pivotally held within a metal frame and biased away from the work surface by a flat spring



member acting against the frame. If desired, a permanent magnet may be attached to each of the portions of the tool so as to ensure proper placement thereof relative to one another.

3,695,090

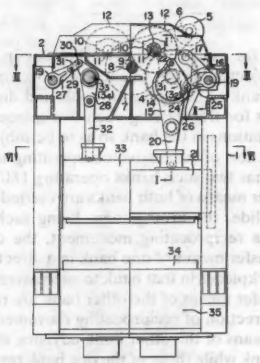
MECHANICAL DOUBLE-ACTION PRESS OF LINK MECHANISM TYPE

Masaaki Kita, Komatsu, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo-to, Japan

Filed Aug. 14, 1970, Ser. No. 63,735

Int. Cl. B21j 9/18

U.S. Cl. 72—450 **2 Claims**



Mechanical double-action press of link mechanism type, in which metal sheet blanks are produced to formed articles by a drawing work, and in particular, within the pressing region, the speed of an inner slide is remarkably slow thereby to produce no cracking or cutting, and at the ascending and returning period of the inner slide, said inner slide is accelerated and rapidly ascends, whereby it is intended to increase the production efficiency of the press-formed articles having no cracks or cuts.

3,695,091

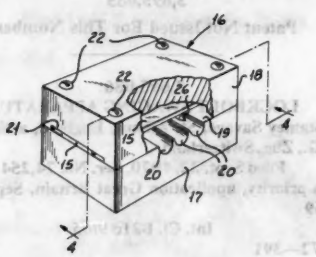
METHOD OF AND APPARATUS FOR MEASURING INTENSITY OF PEENING IN SMALL DIAMETER HOLES

Glenn D. Smith, Enfield, Conn., assignor to Metal Improvement Company, Inc.

Filed Sept. 28, 1970, Ser. No. 76,063

Int. Cl. G01n 3/34

U.S. Cl. 73—11 **14 Claims**



The method of measuring intensity of peening in the Almen scale of small diameter holes, such as 0.5 inch or less, consists of a first step of plotting an intensity curve on a reference graph, which intensity curve is proportional to but a fraction of the Almen scale. The intensity curve is plotted by peening, under a predetermined intensity, a number of Almen strips which have been masked to expose only portions of each of the strips so that each strip has an exposed portion differing in width from the others in equal increments of linear measurement and, then, measuring the curvature of each peened strip. Thereafter, peening a portion of an Almen strip which overlies at least one arcuate groove which has chordal dimension equal to the smallest unit width employed to produce the reference graph. After peening the Almen strip in which the same peening apparatus and technique used to peen the holes of the production pieces is utilized, the curvature of the strip is measured. The measurement is plotted on the reference graph to obtain an Almen scale measurement of the peening intensity. If the measurement is for a hole size outside of the intensity curve, the measurement is then extrapolated by using the reference graph to achieve an Almen scale measurement. This Almen value then can be compared with the Almen scale peening intensity called for to insure that the peening meets that requirement and continues to meet the Almen intensity during production peening.

3,695,092

Patent Not Issued For This Number

3,695,093

DEVICE FOR MEASURING THE SOLIDIFICATION TEMPERATURE OF LIQUIDS

Heinz Hummel, and Herbert Gortz, both of Frankfurt/Main, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius and Bruning, Frankfurt/Main, Germany

Filed Nov. 20, 1970, Ser. No. 91,451

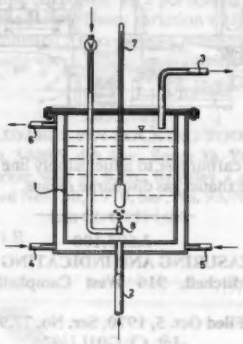
Claims priority, application Germany, Nov. 21, 1969, P 19 58 476.0

Int. Cl. G01n 25/04

U.S. Cl. 73—17 R **6 Claims**

To measure the solidification temperature of liquids a

device is used comprising a heatable and coolable receptacle for a sample of the liquid, a temperature sensitive element and



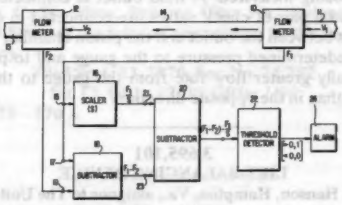
in the receptacle in the vicinity of the temperature sensitive element means to produce a local supercooling.

3,695,094

LEAK DETECTION METHOD AND SYSTEM

Jack R. Hulme, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed July 16, 1970, Ser. No. 55,480
Int. Cl. G01m *3/28*
U.S. Cl. 73—40.5 **13 Claims**



Method and apparatus for determining when the volume of fluid leakage in a conduit exceeds a predetermined percentage of the volume of total fluid flow by measuring the volume of fluid leakage from the conduit, comparing the volume of fluid leakage with a predetermined percentage of the volume of total fluid flow and generating a distinctive signal based on the comparison.

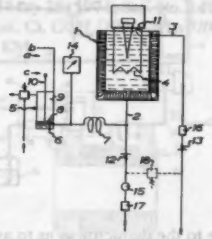
3,695,095

APPARATUS FOR MEASUING WATER IMPURITIES IN OIL

Birger David Lineberg, Ekorrvaegen 7, Koping, Sweden

Filed April 14, 1970, Ser. No. 28,350
Int. Cl. G01n *1/00, 33/28*
U.S. Cl. 73—61.1 R **4 Claims**

An apparatus for measuring water impurities in oil comprises a confined space in which the oil is heated to a temperature higher than the evaporation temperature of water. In accordance with the invention, the confined space is a chamber arranged between an inlet and an outlet and having heating means and temperature control means, said chamber being adapted, by way of valves provided in the inlet and the outlet,



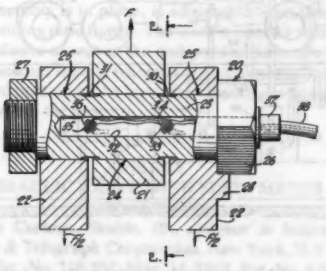
to form a closed system. The chamber has an expansion vessel connected thereto, which is of variable volume and has means for emptying it. Further, the closed system is provided with means for measuring and/or controlling the change of state produced by the heating of the oil.

3,695,096

STRAIN DETECTING LOAD CELL

Ali Umit Kutsay, 3520 Lewis Road, Newton Square, Pa.

Filed April 20, 1970, Ser. No. 30,190
Int. Cl. G01l *1/18*
U.S. Cl. 73—88.5 R **9 Claims**



A strain detecting load cell which is adapted to replace or be readily interchangeable with coupling member such as a pin or bolt. The working dimensions of the cell and the part replaced are the same, except that the cell has short zones of slightly decreased diameter so that the shear strains are concentrated in these zones. An axial bore in the cell contains electrical strain gages attached to its circumferential wall within the concentrating zones and having leads for connection to exterior measuring instrumentation such as Wheatstone bridge equipment. The arrangement and orientation of the gages in the concentrating zones permit evaluation of the applied load both as to magnitude and direction.

3,695,097

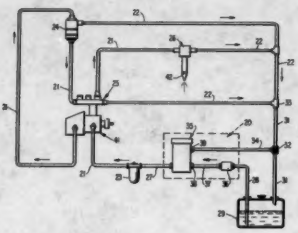
DEDUCTOR FOR FLOW METERING SYSTEM AND APPARATUS

Joseph C. Michalowicz, 7904 Wyndale Road, Chevy Chase, Md.

Filed March 2, 1970, Ser. No. 15,578
Int. Cl. G01l *3/26*
U.S. Cl. 73—113 **4 Claims**

A flow consumption metering system and apparatus employing a flow meter and a mechanism (hereinafter called a

deductor) in the flow supply line from a source to a point of use and a return line for recirculating any unused portion of



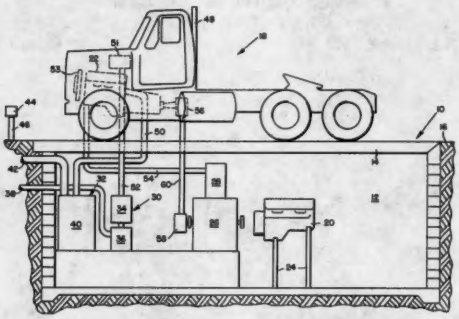
the flow for reuse to the deductor so as to avoid a further metering of the unused portion of the flow.

3,695,098

METHOD AND APPARATUS FOR ISOLATING AND MEASURING VEHICLE NOISE

Kenneth C. Kirkland, Jr., Longview, Tex., assignor to Garlock, Inc., Palmyra, N.Y.

Filed Aug. 27, 1970, Ser. No. 67,426
Int. Cl. G01m *17/00*
U.S. Cl. 73—117.1 **16 Claims**



Method and apparatus for individually isolating and measuring major vehicle noise sources such as the exhaust system, the air intake system and the engine. The noise sources are individually isolated, one at a time, while installed in their normal condition on the vehicle. Noise measurements are then taken on and around the vehicle while the vehicle is located on the ground similar to its operating position on a highway, with no building or reflecting surfaces near the test site which would affect the test results. The noises are individually isolated by parking the vehicle on top of a subterranean building having a soundproof room therein and by locating all but the one noise source being measured in the soundproof room. Standard measurement and analysis equipment are used.

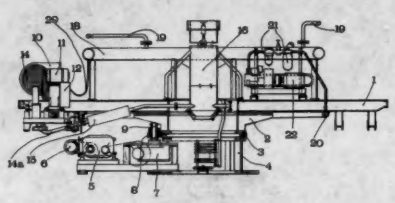
3,695,099

ROTARY DISK ENGINE TESTING ASSEMBLY

Luigi Viano, via Corrado Corradini 20, Moncalieri, Italy

Filed Nov. 3, 1971, Ser. No. 195,312
Int. Cl. G01m *15/00*
U.S. Cl. 73—117.3 **6 Claims**

A rotary disk engine testing assembly comprising a rotatable platform adapted to receive a plurality of internal-combustion engines to be tested or run in, the rotatable platform being rotatably supported on a base support and driven in rotation by drive means. Each engine testing unit on the rotatable platform is provided with a friction brake for applying a load to the engine to be tested, means for clamping the engine, a starter motor and carburetor for such engine, means for con-



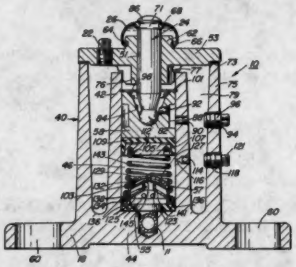
nection of the carburetor to a fuel supply line on the rotatable platform, and exhaust gas discharge means.

3,695,100

FORCE MEASURING AND INDICATING APPARATUS

Wallace F. Mitchell, 916 West Campbell St., Arlington Heights, Ill.

Filed Oct. 5, 1970, Ser. No. 77,966
Int. Cl. G01l *1/02*
U.S. Cl. 73—141 R **4 Claims**



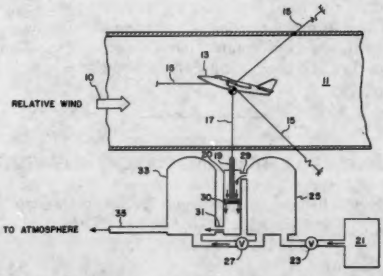
Force measuring and indicating apparatus includes a pressure indicating gauge, such as a Bourdon gauge, and a force responsive sending unit having a liquid containing piston chamber and a piston movable therein in proportion to the force of being measured. A fluid outlet is connected to the gauge, and a pair of check valves are connected in opposing directions between the outlet and the piston chamber to maintain a predetermined pressure to the gauge and to provide a substantially greater flow rate from the gauge to the piston chamber than in the opposite direction.

3,695,101

LIFT-BALANCING DEVICE

Perry W. Hanson, Hampton, Va., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Filed Sept. 8, 1970, Ser. No. 70,032
Int. Cl. G01m *9/00*
U.S. Cl. 73—147 **11 Claims**



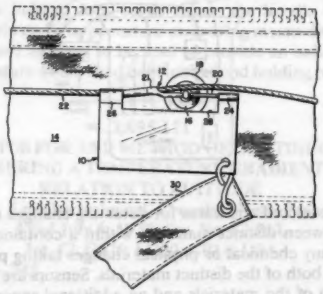
A static force balancing system attached to a lifting body flying on a free-flight suspension system in a wind tunnel

which balances the static lift forces generated in excess of lifting body weight while permitting freedom of movement of the lifting body in response to dynamic forces. The static lift forces are balanced by the flow of pressurized air against a piston sliding loosely in a casing. Friction between piston and casing is essentially eliminated by a portion of the pressurized air leaking past the piston. Force variation with piston position is essentially eliminated by providing a pressure reservoir connected to the casing which acts as an accumulator.

3,695,102
SLIDABLE PIN-LOCKING TOOL

Elbert E. French, 3400 S. 4th Ave., Space 38, Yuma, Ariz., and Robert W. Parker, 480 W. B. St., Brawley, Calif.

Filed Nov. 30, 1970, Ser. No. 93,760
Int. Cl. G01l *1/26*
U.S. Cl. 73—141 R **3 Claims**

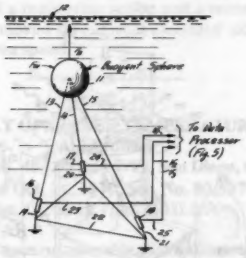


A tool particularly suitable for testing the maximum pull force on a parachute rip cord pin connector, the tool being capable of detachably fitting on the connection to enable only partial withdrawal of the pin without complete separation of the connection that would deploy the parachute.

3,695,103
CURRENT AND TURBULENCE METER

Franklyn C. W. Olson, Panama City, Fla., assignor to The United States of America as represented by the Secretary of the Navy

Filed Sept. 23, 1970, Ser. No. 74,782
Int. Cl. G01p *13/00*; G01w *1/00*
U.S. Cl. 73—170 A **9 Claims**

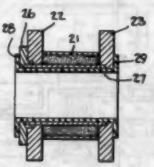


The invention disclosed is an instrument for sensing, measuring, and indicating the velocity components in, the resultant velocity and direction of flow of, and turbulence occurring within a moving fluid medium. It incorporates a fluid movement responsive spherical sensor tethered by a trio of taught wires containing strain gages, one or more computers (depending on the parameters being calculated), and a readout calibrated in terms of the information desired during given operational circumstances.

3,695,104
ELECTROMAGNETIC FLOWMETER HAVING REMOVABLE LINER

Elmer D. Mannherz, Southampton, and Henry M. Hermanns, Huntingdon Valley, both of Pa., assignors to Fischer & Porter Co., Warminster, Pa.

Filed May 28, 1971, Ser. No. 147,827
Int. Cl. G01f *1/00*; G01p *5/08*
U.S. Cl. 73—194 EM **9 Claims**

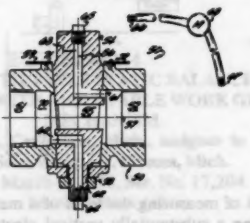


An electromagnetic flowmeter having a meter pipe of magnetic material terminating at either end in a coupling flange. Coils are disposed within the pipe to establish an electromagnetic field which is mutually perpendicular to the longitudinal axis of the pipe and to a diametrical axis extending between a pair of electrodes mounted on the pipe. Telescopically insertable within the pipe is a replaceable liner assembly including a relatively rigid sleeve of non-magnetic material having a flange at only one end thereof which, when the sleeve is inserted, abuts the face of the corresponding flange in the meter pipe. Concentrically disposed within the sleeve is a tubular liner of resilient insulating material. The liner is provided at one end with a first flange abutting the face of the sleeve flange, and a second flange at the other end thereof, which when the assembly is in place, is adapted to abut the face of the corresponding pipe flange. The liner is bonded to the inner wall of said sleeve except at the end portion thereof which includes said second flange, whereby by temporarily collapsing the unbonded portion of the liner, the assembly may be readily telescoped within the pipe.

3,695,105
HYDRAULIC VALVE WITH FLUID METER CONNECTIONS

Gilbert Fritz Carlson, Skokie, Ill., assignor to International Telephone & Telegraph Corporation, New York, N.Y.

Division of Ser. No. 718,295, Mar. 14, 1968, Pat. No. 3,590,473
Filed March 25, 1970, Ser. No. 25,619
Int. Cl. G01f *1/00*
U.S. Cl. 73—211 **6 Claims**

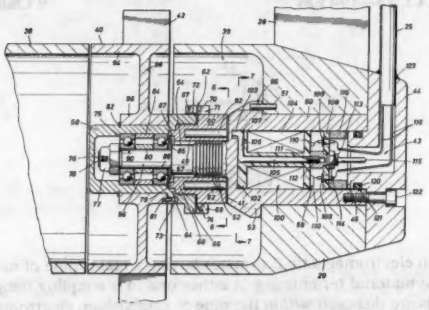


The rotor in a square cock head valve has the usual main fluid passage. In addition, it also has upstream and downstream orifices communicating connectably to a meter attachment point on the valve rotor. This way, a meter may be attached or removed by merely closing the main valve. There is no need to provide pressure tapping valves for controlling the flow of fluids when the meter is attached to or removed from its connections with the housing. When the meter is not attached, non-leaking plugs seal off the valve.

3,695,106
GAS TURBINE METER

Bernard H. Gelsow, Houston, Tex., assignor to Daniel Industries, Inc., Houston, Tex.

Filed July 2, 1970, Ser. No. 51,834
Int. Cl. G01f *1/06*
U.S. Cl. 73—231 R 9 Claims

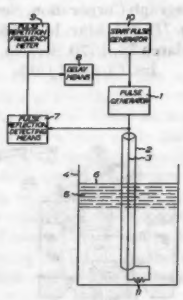


In one exemplar embodiment, a gas turbine flow meter is provided having a magnetic induction signal producing means disposed within the gas flow path of the meter and having unique weir type seals for protecting the rotor bearings from contamination, thus substantially prolonging the life of the rotor bearings. The magnetic induction coil and magnets utilized in the signal producing means are radially spaced significantly closer to the rotor axis of rotation than the rotor blades for substantially increasing the mechanical advantage of the meter and improving its low pressure, low flow-rate signal producing capability.

3,695,107
METHOD OF MEASURING THE LEVEL OF A MATERIAL IN A TANK, AND AN APPARATUS FOR PRACTICING THIS METHOD

Carl Hellmuth Hertz, Skolbankovagen 8, and Kjell O. T. Lindstrom, St. Hans Grand 25 A, both of Lund, Sweden

Filed June 1, 1970, Ser. No. 42,070
Int. Cl. G01f *23/28*
U.S. Cl. 73—290 R 7 Claims

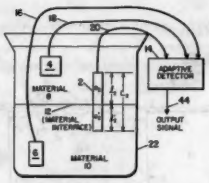


A method of measuring the level of a material filled into a tank by using a substantially vertical electromagnetic delay line partly submerged in the material so that the submerged part of the line has another characteristic impedance than the line part above the level of the material, sending an electric pulse down the delay line and measuring the time it takes the pulse to reach the level of the material and the time it takes the pulse reflection generated at the level of the material to return to the input end of the line as a measure of the level of the material in the tank. An apparatus for this method has an electronic oscillating system connected to the input end of the delay line and comprising a triggered pulse generator and a pulse reflection detecting means for triggering the pulse generator each time a pulse reflection appears at the input end of the delay line, and a pulse repetition frequency meter connected to the electronic oscillating system for indicating the oscillating frequency thereof as a measure of the level of the material in the tank.

3,695,108
ADAPTIVE PROPORTIONAL CONTROL FOR DETERMINING INTERFACES OF DISTINCT MATERIALS

Noel D. Wygant, Littleton, Colo., assignor to Marathon Oil Company, Findlay, Ohio

Filed July 23, 1970, Ser. No. 57,634
Int. Cl. G01f *23/22, 23/26*
U.S. Cl. 73—290 R 17 Claims

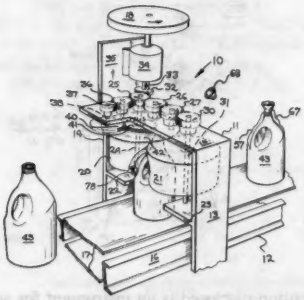


A process and apparatus for detecting changes in interface level between distinct materials within a container independent of any chemical or physical changes taking place within either or both of the distinct materials. Sensors are introduced into each of the materials and an additional sensor is placed across the interface, the output from each of the three sensors is transmitted to an adaptive detector device which combines these outputs by means of a control equation to give an emanating signal proportional solely to the position of the interface within the container.

3,695,109
METHOD AND APPARATUS FOR DEFLASHING PLASTIC ARTICLES

Albert R. Uhlig, Toledo, Ohio, assignor to Owens-Illinois, Inc.

Filed June 26, 1970, Ser. No. 50,194
Int. Cl. B26d *11/00*
U.S. Cl. 83—37 10 Claims



This invention relates to the removal of unwanted flash material from the seam areas of plastic articles such as handle containing bottles. A rolling cutter is employed and is synchronized with the movement of the containers so that the cutting knives enter the handle portion of the bottle and remove the flash material therefrom.

3,695,110

BABY THERMOMETER SPOON

Alexander Biolik, Marsstrasse 14, 8 Munich, Germany

Filed April 2, 1970, Ser. No. 25,199

Claims priority, application South Africa, Sept. 29, 1969, 69/6804

Int. Cl. G01k *13/12, 13/00*

U.S. Cl. 73—343 R **9 Claims**

A temperature measuring device in the shape of a spoon or in another shape suited for feeding purposes comprising a feeding instrument having a handle and a food holding portion adapted for holding food to be eaten, the handle having a recess therein and a temperature measuring means disposed in the recess and adapted to be read to provide an indication of the temperature of the food held in the food holding portion.

3,695,111

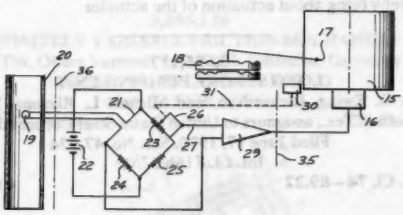
APPARATUS FOR AND METHOD OF CONTINUOUSLY MEASURING A TEMPERATURE GRADIENT IN RELATION TO ALTITUDE

Pierre Belle, 5 rue Lecardonnel, Grenoble, Isere, France

Filed July 6, 1970, Ser. No. 52,561

Int. Cl. G01k *13/00;* **G01w** *1/04*

U.S. Cl. 73—345 **2 Claims**



The continuous measurement of a temperature gradient in relation to altitude is made directly by providing in the apparatus units sensitive to temperature and altitude and arranged to control a registering scribe and a recording drum as the apparatus is moved through an extended altitude (height or depth) at a given speed.

3,695,112

ELECTRICALLY OPERATED TEMPERATURE SENSING ASSEMBLY

Clarence R. Possell, 4842 Viane Way, San Diego, Calif.

Filed Oct. 14, 1970, Ser. No. 80,537

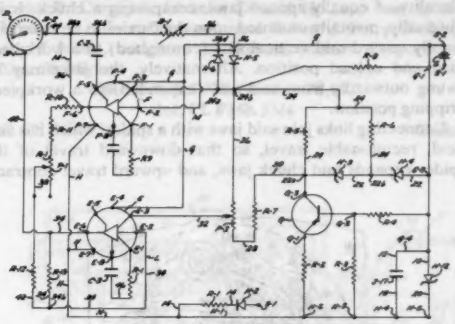
Int. Cl. G01k *7/20;* **H01l** *3/00*

U.S. Cl. 73—362 AR **5 Claims**

A temperature sensing assembly that indicates the temperature of an electrical resistance element containing sensor by comparing the differential in voltages between that in a first feedback loop and the voltage in a second feedback loop of which said sensor forms a part.

The operating components of the assembly are: the temperature sensor; an electric power supply; a voltmeter; and an electric circuit that includes first and second operational amplifiers that have said first and second loops associated therewith and means in said circuit for supplying a constant current input to said amplifiers.

The sensor may be any resistance element that has a variable linear resistance value over a substantial temperature range. However, the assembly is considered to operate with



optimum results, when the sensor described in the specification is used therewith.

3,695,113

SAMPLING METHOD AND APPARATUS

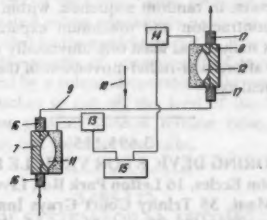
Graham Broadbent, and John Rickard Mansfield, both of Stockton-on-Tees, England, assignors to Imperial Chemical Industries Limited, London, England

Filed March 30, 1970, Ser. No. 23,725

Claims priority, application Great Britain, March 28, 1969, 16,455/69

Int. Cl. G01n *1/14*

U.S. Cl. 73—421 **11 Claims**



A method of sampling comprises regulating the flow of a carrier liquid at two points between which is located the sample source, the rate of flow upstream of the source being arranged to be less than that downstream of the source, the difference in rate being made up by withdrawal of a sample into the carrier liquid.

3,695,114

UNIVERSALLY TILTABLE STATIC BALANCE TESTING APPARATUS WITH ADJUSTABLE WORK GRIPPING MECHANISM

Thomas C. Smith, Centerline, Mich., assignor to Micro-poise Engineering & Sales Company, Wixom, Mich.

Filed March 6, 1970, Ser. No. 17,204

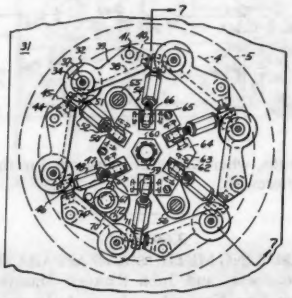
Int. Cl. G01m *1/04*

U.S. Cl. 73—485 **14 Claims**

A workpiece carrier is supported for tilting travel about a substantially vertical axis upon an arcuately spherical universal pivot, which pivot rests upon a seat having a corresponding sphericity. The seat surmounts an annular pedestal situated upon the top surface of a housing. An annular clamp concentrically encircles the pedestal, and has limited, reciprocable, vertical travel thereon. Drive means is provided to urge the clamp in downward travel to a carrier restraint position. A portion of said annular clamp is adapted to engage the carrier in the restraint position to resist tilting travel of the pivot.

Drive means is provided, also, to drive the annular clamp in upward travel to a carrier release position. The release position leaves the pivot free for tilting travel in any direction. A plurality of equally spaced jaws, comprising a chuck, is individually, pivotally mounted upon the carrier to be swung inwardly toward said vertical axis (contracted) to a workpiece load and unload position. Alternatively, the jaws may be swung outwardly from said axis (expanded) to a workpiece gripping position.

Connecting links join said jaws with a spider, which has vertical, reciprocable travel, so that downward travel of the spider expands said chuck jaws, and upward travel contracts



said chuck jaws. A spring tends to drive the spider in downward travel (expansion) and a fluid motor opposes said spring to drive the spider in upward travel (contraction). A typical workpiece is a pneumatic tire, with the chuck jaws engaging upon the beads of the tire when the chuck expands. The actual gripping position of the jaws is determined by the bead diameter, and hence the chuck can accept a plurality of such diameters, in random sequence, within the limits of its minimum contraction and maximum expansion. Each connecting link includes at least one universally movable, spherical joint, to afford non-radial movement of the linkage relative to said vertical axis.

3,695,115

MONITORING DEVICE FOR VEHICLE BEHAVIOUR

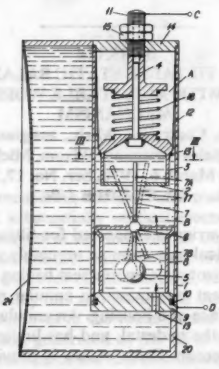
Anthony John Eccles, 16 Lefton Park Rd., Liverpool 8; Alistair Donald Mant, 35 Trinity Court Grays Inn Road, London, and Barry Owen Shorthouse, Liverpool, all of England, assignors to said Eccles and Mant, by said Shorthouse

Filed Nov. 12, 1971, Ser. No. 98,389

Claims priority, application Great Britain, Nov. 16, 1970, 54,463/70

Int. Cl. G01p *15/02*

U.S. Cl. 73—510 **20 Claims**



The invention comprises apparatus for mounting in a vehicle, which monitors the horizontal acceleration of the vehicle, and which signals when a level of acceleration is exceeded, the level at which a signal is made being determined by and varied with the speed of the vehicle.

3,695,116

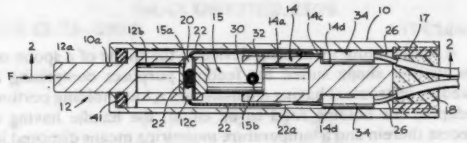
NON-EXPLOSIVE ELECTRICALLY INITIATED HEAT-IGNITABLE ACTUATOR

Robert Baur, Los Angeles, Calif., assignor to The Bunker-Ramo Corporation, Oak Brook, Ill.

Filed Sept. 30, 1970, Ser. No. 76,952

Int. Cl. G05g *17/00*

U.S. Cl. 74—2 **24 Claims**



A non-explosive, electrically initiated, heat-ignitable actuator constructed and arranged in the form of a biased, collapsible dual piston assembly. When the actuator is in the unactuated condition, the dual piston assembly is prevented from collapsing by an electrically triggerable dual shear pin and associated heat-ignitable wire arrangement. The shear pins and their associated wires are composed of a primarily alluminum and palladium bimetallic composition which when ignited produces a violent but non-explosive reaction which rapidly propagates to all portions of the material. The construction of the dual piston assembly is such that ignition of either or both of the shear pins causes the piston assembly to collapse and thereby bring about actuation of the actuator.

3,695,117

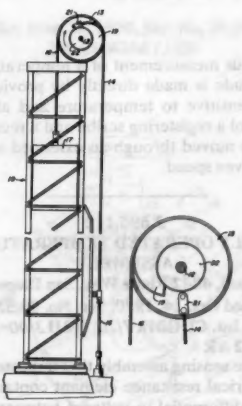
LONG STROKE PUMPING UNIT

Roy D. Ewing, Richardson, and Michael L. Rizzone, Dallas, both of Tex., assignors to United States Steel Corporation

Filed June 17, 1970, Ser. No. 47,074

Int. Cl. F16h *27/02*

U.S. Cl. 74—89.22 **4 Claims**



An improvement in a long-stroke pumping unit of the type shown in an earlier patent (Kuhns et al. U.S. Pat. No. 3,285,081). The patented unit includes a tower, drums mounted at the top of the tower, and a reversible drive for the drums. Flexible cables suspend a rod string and a counterbalance from the drums to move in opposite directions. Improvement is in attaching the cables to the drums with pivoted levers to prevent detachment caused by overrun at the ends of

a stroke and to shorten the moment arms more effectively at the ends of each stroke.

3,695,118

Patent Not Issued For This Number

3,695,119

WORM DRIVE WITH CYLINDRICAL WORM

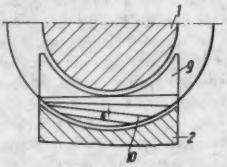
Gerhard Stade, Berlin, Germany, assignor to Firma Herbert Lidner GmbH, Berlin, Germany

Filed Sept. 28, 1970, Ser. No. 75,819

Claims priority, application Germany, Nov. 27, 1969, P 19 60 464.9

Int. Cl. F16h *1/08, 57/04*

U.S. Cl. 74—427 **3 Claims**



A worm drive is formed of a cylindrical worm which meshes with a worm wheel, and the cylindrical worm has cycloidally shaped flanks. The combined configurations of the worm and worm wheel provides two lines of contact between their corresponding flanks when they are in meshed engagement.

3,695,120

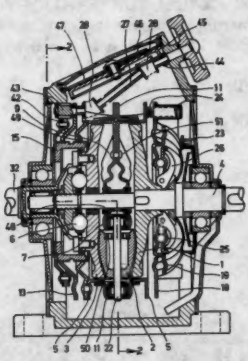
INFINITELY VARIABLE FRICTION MECHANISM

Georg Titt, Obere Vorstadt 9, D-8358, Vilshofen, Germany

Filed Jan. 14, 1971, Ser. No. 106,373

Int. Cl. F16h *37/06*

U.S. Cl. 74—690 **25 Claims**



Infinitely variable friction mechanism having axially aligned driving and driven shafts with attached friction disks that are rotated in opposite directions by barrel-shaped rollers that are articulated in a basket and in a first ring that is longitudinally shiftable relative to the basket. A second ring that is also independently longitudinally shiftable cooperates with the first ring in conjunction with the torque prevailing on the basket for providing counter pressure regulation of the frictional matings. Coupled to the output of the friction mechanism is a planetary gearing arrangement having an inside sun wheel driven by the driving shaft and an outside wheel connected to the driven friction disk but supported by a wheel which may be allowed to turn freely or to be braked in one or both rotational directions.

3,695,121

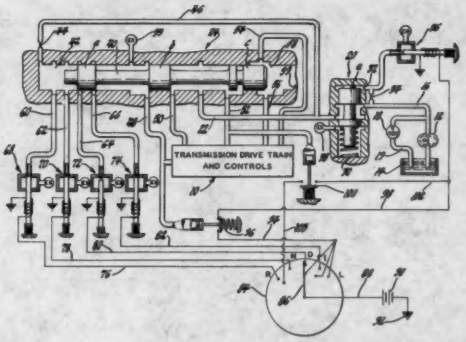
DRIVE MODE SELECTION SYSTEM FOR TRANSMISSIONS

Gordon D. Corrigan, Livonia; Donald H. Lee, Ann Arbor; Howard E. Olsen, Plymouth, and Robert J. Petry, Berkley, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 5, 1970, Ser. No. 78,077

Int. Cl. F16h *3/44*

U.S. Cl. 74—753 **8 Claims**



Transmission operation selector system in which a selector valve is moved to predetermined control positions by the force of line pressure acting on a differential area of the selector valve and the opposing force of a signal pressure in a control chamber at one end of the valve. Signal pressure is controlled by solenoid operated valves operatively connected to a selector switch controlled by the vehicle operator. A line feed valve which controls the supply of operating fluid to the selector valve is controlled by a solenoid operated valve and cooperating pressure switches to cut off the feed of the fluid to the selector valve to prevent vehicle motion other than that selected when any one solenoid has failed.

3,695,122

CONTROL SYSTEM FOR AN AUTOMOTIVE AUTOMATIC POWER TRANSMISSION

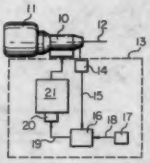
Namio Irie, Yokohama, and Ichimura Hirohisa, Yokohama, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Oct. 13, 1970, Ser. No. 80,310

Claims priority, application Japan, Oct. 13, 1969, 44/81384

Int. Cl. B60k *21/00*

U.S. Cl. 74—864 **6 Claims**

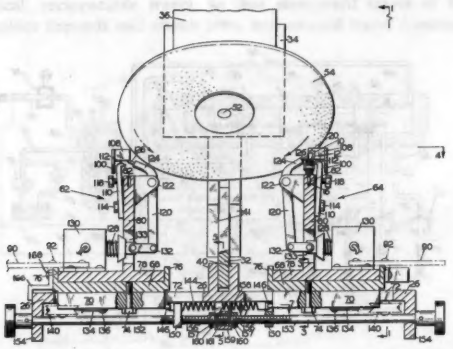


A control system for controlling the line pressure in a hydraulic control system of an automotive automatic power transmission, in which a line pressure regulator valve is controlled by a variable back pressure produced by a fluid jet nozzle which is electrically controlled in response to a variation in the vehicle speed, whereby a cutback is rapidly effected in the line pressure to effect a smooth shifting between the gear ratios.

3,695,123
SAW CHAIN GRINDING MACHINE

Elmer R. Silvey, Route 1, Box 138, Eagle Point, Oreg.

Continuation of Ser. No. 41,783, June 5, 1971, abandoned, which is a continuation of Ser. No. 704,789, Feb. 12, 1968, abandoned. This application Oct. 7, 1971, Ser. No. 187,422
Int. Cl. B23b *63/16*
U.S. Cl. 76—43 16 Claims

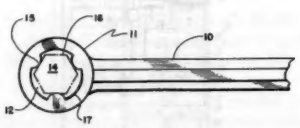


A grinding wheel is mounted on a machine base, and a pair of saw chain holders disposed on opposite sides of the grinding wheel are also mounted on the base. The holders are urged toward the grinding wheel by a spring and are moved away from the grinding wheel by pull cables operated by foot pedals. A turnscrew assembly is rotatably supported on the base and has right and left hand threads on opposite ends thereof on which are threadedly mounted stop fingers arranged such that by adjustment of one of the stop fingers for selectively locating its respective holder with relation to the grinding wheel, the other stop finger is simultaneously adjusted so that the other holder is positioned in precisely the same spaced position as the first mentioned holder but on the opposite side of the grinding wheel. A releasable solenoid operated hold-down lever for the saw chain is provided on each holder, and these levers are released when the foot pedals are depressed, such being accomplished by means of switches in the circuit to the solenoids and arranged for engagement by the foot pedals.

3,695,124
WRENCH HEAD

Herman A. Myers, R.D. # 1, Box 125, Lake Lynn, Pa.

Filed Nov. 27, 1970, Ser. No. 93,061
Int. Cl. B25b *13/06*
U.S. Cl. 81—121 R 2 Claims

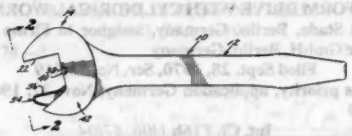


An annular wrench head in the form of a socket or a box end wrench which has a plurality of arcuately cross-sectioned ribs extending into the central opening of the head and spaced from one another so as to contact the midway point of certain of the faces of the fastener head. The spaces between the ribs are in alignment with the edges of the fastener head.

3,695,125
OPEN END RATCHET WRENCH

Robert I. Glass, Holyoke; William Phillips, and William R. House, both of Northampton, all of Mass., assignors to Cesco Mfg. Corp., Northampton, Mass.

Filed Oct. 6, 1970, Ser. No. 78,472
Int. Cl. B25b *13/12*
U.S. Cl. 81—179 9 Claims

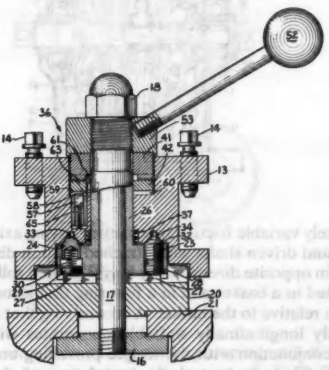


An open end ratchet wrench having a laminar head structure consisting of a central body portion with a pair of side caps permanently metal bonded on opposite sides thereof, the head structure defining therein between the caps an arcuate channel within which a spring biased ratchet pawl is slidable between an extended torquing position and a retracted ratcheting position. A pawl retention detent forming a permanent part of the head structure is movable between a temporary open position permitting insertion of the pawl and its biasing spring into the otherwise completely fabricated head structure, and a permanent closed position wherein the pawl is permanently retained in the head, the detent means defining the outer limit of sliding movement of the pawl in the head. With this construction a true open end ratchet wrench can be economically fabricated of any desired tool metal with a minimum number of parts and by simple production steps; the resulting wrench having high torquing capacity, minimal head thickness, and attractive appearance, approaching these respective characteristics in a solid open end wrench of comparable size.

3,695,126
INDEXABLE TURRET TOOL POST

Bruce M. Armstrong, Williams Bay, Wis., and Jack M. Butler, Mount Prospect, Ill., assignors to Armstrong Bros. Tool Co., Chicago, Ill.

Filed May 18, 1970, Ser. No. 38,180
Int. Cl. B23b *29/24*
U.S. Cl. 82—36 A 3 Claims



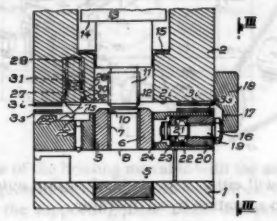
An indexable turret tool post is provided, in which a plurality of index pins situated around a central tool post bolt are provided. To rotate the tool block and to lock the tool block into position on the index pins, nestable cam means are included.

3,695,127

TOOL SUPPORT FOR A MACHINE TOOL

Martial Chabrier, Le Pecq, France, assignor to C.N.M.P. Berthiez, Paris, France

Filed June 1, 1970, Ser. No. 41,908
Claims priority, application France, June 6, 1969, 6918820
Int. Cl. B23b *29/08, 29/12*
U.S. Cl. 82—36 R 13 Claims



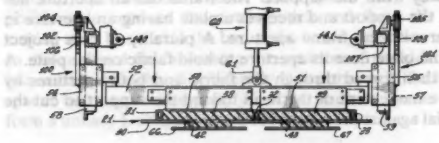
A tool support for a machine tool comprises support structure adapted to be attached to the machine tool and a tool holder adapted to receive a tool, the support structure and tool holder comprising a screw and nut to draw the support structure and tool holder towards each other into abutting relationship while permitting relative movement in another direction, corrugations on the support structure and the tool holder interengaging to constrain the last-mentioned relative movement to said another direction, an inclined surface being provided on the tool holder, the surface extending transversely of the said another direction and being engaged by spring-loaded plungers in the support structure whereby to effect relative movement of the support structure and tool holder in said another direction to predetermined relative positions.

3,695,128

MACHINE FOR FORMING CAVITIES IN FOAM PADS AND TRIMMING SAME

Carlos A. Gentile, Westminster, Calif., assignor to Califoam Corp. of America, Compton, Calif.

Filed Sept. 14, 1970, Ser. No. 71,758
Int. Cl. B26d *3/00, 7/14*
U.S. Cl. 83—1 12 Claims



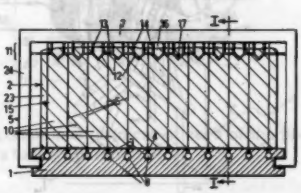
Machine for operating on foam pads or blanks used as fillers in automobile seat upholstering, which require one or more cavities in the back of the pad, the machine including a table die with an aperture defining the outline of the cavity, a primary pressure plate adapted to compress the pad and cause material of the pad to form a bulge through the aperture of the die, a secondary pressure plate below the die working upwardly against the bulge, a reciprocating knife travelling adjacent the bottom of the die to cut off the material of the bulge, in conjunction with descending knives, adjustable as to inclination, for cutting the ends to size.

3,695,129

APPARATUS FOR CUTTING A BLOCK OF PLASTIC MATERIAL

Berend Vrijma, Vuren, Netherlands, assignor to Calsilox S.A. Luxemburg Ville, Luxembourg

Filed June 22, 1970, Ser. No. 48,268
Claims priority, application Netherlands, June 26, 1969, 6909802
Int. Cl. B26d *3/06*
U.S. Cl. 83—5 2 Claims



An apparatus for cutting a block of material in a plastic state, more particularly light weight concrete, grooved at the top, wherein a top crust cut loose from the block is removed by suction. If the crust is cut loose from the block by a horizontal cutting wire, and the grooves are cut away by means of blades, the material of the grooves remains behind on the top surface of the block, when the crust is removed by suction.

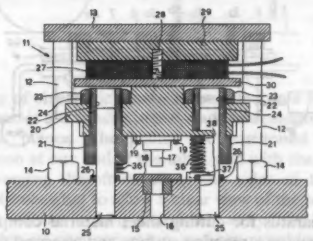
The material of the crust and the groove can be removed simultaneously by suction if the crust is cut loose along the profile of the grooves.

3,695,130

HIGH VELOCITY PRESS

Renzo Fedrigo, Banchette, Turin, Italy, assignor to Ing. C. Olivetti & C., S.p.A., Turin, Italy

Continuation-in-part of Ser. No. 869,059, Oct. 24, 1969, abandoned. This application Sept. 14, 1971, Ser. No. 180,349
Int. Cl. B26d *5/08;* B26f *1/02*
U.S. Cl. 83—13 5 Claims



Presses for metal or other hard material in which the driving power for the punch is derived primarily from the kinetic energy of the punch element and the supporting structure moving at high speed. Capacitive discharge through a coil produces an electromagnetic interaction with a conductive plate adjacent to the coil and secured to the punch element to achieve the high velocity and therefore the desired kinetic energy, which energy is transformed to mechanical punching force.

3,695,131

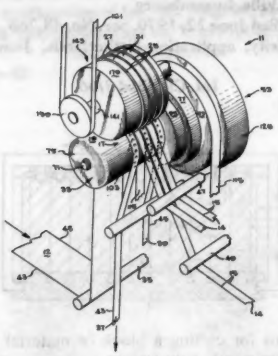
METHOD OF AND APPARATUS FOR SLITTING WEBS

Ernest F. Zimmermann, Buffalo Grove, Ill., assignor to Ampex Corporation, Redwood City, Calif.

Filed Nov. 9, 1970, Ser. No. 87,677
Int. Cl. B26d *4/04, 4/14*
U.S. Cl. 83—56 10 Claims

Thin elongated webs are slit by circular slitter blades having razor sharp cutting edges into strips having straight line edges

which are parallel to each other and which are held to a close tolerance width dimension. The web is carried across cutting edges of the slitter blades by a traveling support surface and is



held thereon against longitudinal or transverse shifting movement relative to the traveling support surface. The slitter blades are rotated to distribute wear uniformly about the circumferences thereof.

3,695,132

APPARATUS FOR CUTTING SHEET MATERIAL

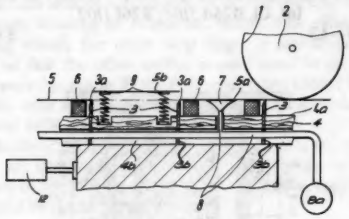
Jean Pierre Cuir, and Gerard Cuir, both of 4, rue du Chateau, 59 Lille, France

Filed Nov. 12, 1970, Ser. No. 88,572

Claims priority, application France, Nov. 13, 1969, 6939101

Int. Cl. B26d *1/56, 7/18*

U.S. Cl. 83—98 **6 Claims**



An apparatus for cutting sheet material comprises a first member having a reaction surface and a second member carrying a cutting blade for cooperating with the reaction surface to cut sheet material into portions when passed between the first and second members. Elements are provided for maintaining one portion in the apparatus while other elements are provided for repelling another portion from the apparatus.

3,695,133

APPARATUS FOR CUTTING STRIP MATERIAL IN VARIABLE LENGTHS

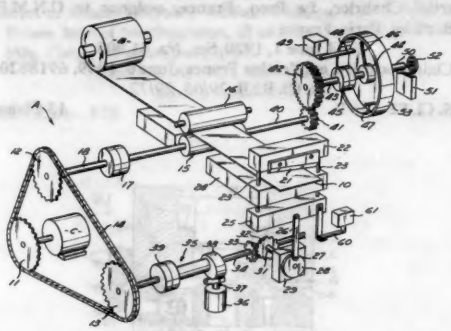
Theodore R. Finke, Euclid, Ohio, assignor to The Euclid Products Co., Inc., Willoughby, Ohio

Filed July 16, 1970, Ser. No. 55,401

Int. Cl. B26d *5/24*

U.S. Cl. 83—204 **6 Claims**

Apparatus for cutting strand material, such as fabric strip material into finite segments of a preselected length. An end length of strip material is fed past a cutting mechanism until a desired length has been advanced. Then the feeding is stopped by an adjustable, length control mechanism operatively connected to the feeding mechanism and the cutting mechanism is actuated to cut the delivered segment from the strip. The



apparatus will either repeat this function automatically or in response to actuation by an operator.

3,695,134

DEVICES FOR CUTTING FABRIC

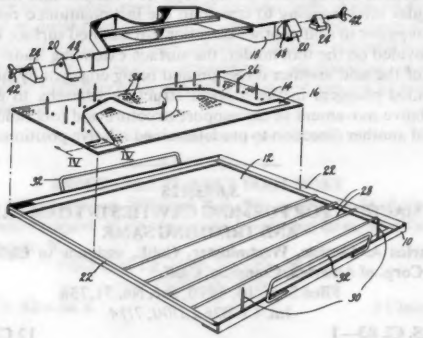
Albert R. Hardwick, Leicester, England, assignor to USM Corporation, Flemington, N.J.

Filed Nov. 3, 1970, Ser. No. 86,435

Claims priority, application Great Britain, Nov. 5, 1969, 54,158/69

Int. Cl. B26d *7/02*

U.S. Cl. 83—451 **4 Claims**



A device for cutting fabric has a pinning frame placed on a support of a press having a head relatively movable toward and away from the support. The frame has an aperture adjacent the support and receives a plate having an aperture in register with the frame aperture. A plurality of pins project from the plate near its aperture to hold fabric on the plate. A die is then forced through the fabric and both apertures by relative movement of the head toward the support to cut the material against the support of the press.

3,695,135

CIRCULAR SAW CONSTRUCTION

Leopold Jagers, Euskirchen Rhineland, Germany, assignor to Trennjager Maschinenfabrik, Euskirchen/Rhineland, Germany

Filed July 22, 1970, Ser. No. 57,158

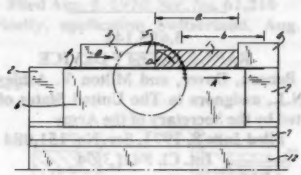
Claims priority, application Germany, July 23, 1969, P 19 37 321.8

Int. Cl. B26d *7/02*

U.S. Cl. 83—455 **8 Claims**

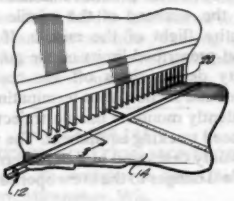
A housing of a circular saw is mounted for displacement in a predetermined direction and has an upper surface. A rotary saw blade is carried by the housing and projects at least in part

upwardly of the upper surface thereof. Its general plane is coincident with the predetermined direction. Mounting means is provided for mounting —upwardly proximal to the upper surface of the housing—workpieces which in the aforementioned predetermined direction have at most a predetermined maximum dimension. Supporting plate means is provided on



the upper surface of the housing movable with the same and in supporting engagement with a mounted workpiece. According to the invention the supporting plate means comprices a portion which projects beyond the saw blade in the predetermined direction by a distance which at least equals two thirds of the maximum dimension mentioned before to thereby offer additional support to the workpiece.

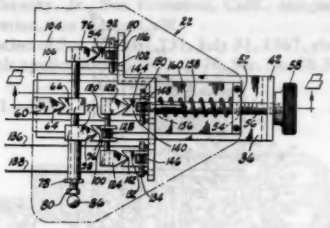
3,695,136
CUTTING STICK SPACER
Richard J. Horne, 13908 Barrydale St., La Puente, Calif.
Filed Oct. 16, 1970, Ser. No. 81,390
Int. Cl. B26d *7/20*
U.S. Cl. 83—658 **10 Claims**



Spacer means for the cutting stick of a paper cutting machine to permit periodic lateral adjustment of the stick relative to the plane of the cutting blade so as to locate different face portions of the stick in position for contact by the blade and thereby extend the useful life of the stick. The spacer means includes two or three spacer bars which are positionable between the cutting stick and the walls of the cutting stick channel in the bed of the cutting machine and are so dimensioned that reversing the position of the side spacer bar or bars shifts the stick laterally in the channel. The bottom spacer bar may be integrally joined to one side spacer bar to form a unitary L-shaped spacer member.

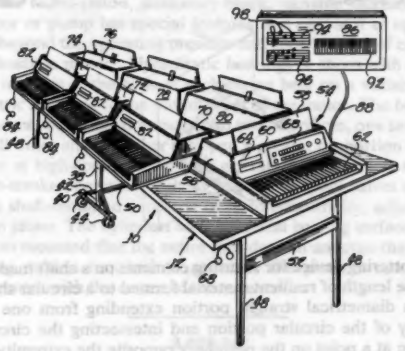
3,695,137
TENSION ADJUSTMENT FOR STRINGED MUSICAL INSTRUMENTS
Robert C. Eurich, 3109 Delaware, Fling, Mich.
Filed May 4, 1970, Ser. No. 34,205
Int. Cl. G10d *3/14*
U.S. Cl. 84—312 **12 Claims**

A tuning mechanism for a stringed musical instrument comprising a compound pivot assembly for anchoring the ends of the vibrating strings, said mechanism including pivoted members for balancing the tension in each string of separate pairs of strings, and other pivoted members for balancing the tension in one pair of strings with respect to tension in another pair of strings whereby a change in tension of one string will affect the tension in each of the other strings, and means for



effecting a common adjustment of each of the pivoted members during a tuning operation.

3,695,138
PORTABLE MUSIC LABORATORY
Clifford W. Andersen, DeKalb, Ill., assignor to The Wurlitzer Company, Chicago, Ill.
Filed Feb. 11, 1970, Ser. No. 10,363
Int. Cl. G09b *15/00*
U.S. Cl. 84—470 **7 Claims**

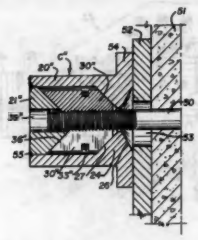


A plurality of electronic pianos is mounted on a folding table. One piano is a teacher's piano, and the remaining pianos are students' pianos. The pianos are positioned with the teacher's piano at one end of the table, and with the students' pianos converging therefrom along the sides of the table, being angled somewhat to allow a clear view of the teacher by each student without looking completely away from his piano. Each piano has its own generators and can reproduce locally at a loudspeaker or earphones, or at the teacher's piano. A table folds, rising up at its center-line, and dropping down at the outer ends in a counterbalancing arrangement, whereby all of the pianos lie on outer faces of the table for movement of the table on casters, the entire assembly when folded readily fitting through a standard 30 inch interior door to allow movement from one room to another. The teacher's piano is coupled to a display panel showing musical staffs and a keyboard, whereby the students may observe visually the notes played by the teacher.

3,695,139
QUICK CONNECT COUPLER
Wilson S. Howe, 1935 Spruce Avenue, Longmont, Colo.
Filed March 2, 1970, Ser. No. 15,613
Int. Cl. F16b *37/10*
U.S. Cl. 85—33 **11 Claims**

A quick connect coupler for a threaded bolt. The coupler includes a segmented core within its body having a threaded

passageway to receive the bolt. The segments of the core spread apart when the bolt is inserted into the coupler and into the passageway. Then the segments of the core come together



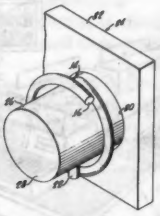
to grip the bolt and as the coupler is turned upon the bolt to tighten it, the core within the coupler body wedges against an inclined surface in the body to hold the segments together against a pull of the bolt.

3,695,140

COTTERING DEVICE

Robert L. Noble, Costa Mesa, Calif., assignor to Fowler Knobbe & Martens, Orange, Calif.

Filed March 23, 1970, Ser. No. 21,838
Int. Cl. F16b *21/14*
U.S. Cl. 85—8.3 **3 Claims**



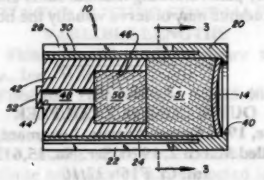
A cottering device for securing elements on a shaft made of a single length of resilient material formed to a circular shape with a diametrical straight portion extending from one extremity of the circular portion and intersecting the circular portion at a point on the periphery opposite the extremity essentially on the line of the diameter of the circle. Provision is made for rendering the device unsusceptible to being dislodged by vibration or pressure from the elements secured by the device, without the need for permanent bending of the device to lock it in place.

3,695,141

EXPLOSIVE ORDNANCE DEMOLITION WEAPON

Seymour Kronman, Aberdeen, Md.; Dana E. Spencer, Alexandria, Va., and Larry D. Henderson, Bryans Road, Md., assignors to The United States of America as represented by the Secretary of the Navy

Filed Nov. 6, 1970, Ser. No. 87,522
Int. Cl. F41f *1/00*
U.S. Cl. 89—1 B **5 Claims**



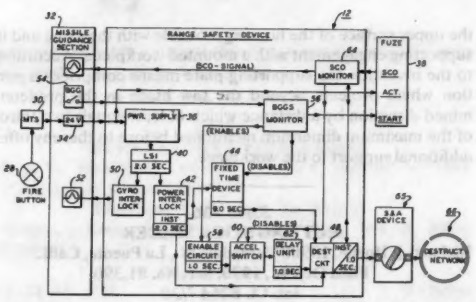
A weapon for firing a ballistic disc at an explosive ordnance device for disabling the target device. The ballistic disc, which is spherically curved and being of greater thickness at its central portion than at its peripheral portion, is positioned transversely within a cartridge casing with its concave side toward the target. A planar shock front is generated by an explosive train in the cartridge to propel the disc toward the target at very high velocities and, during initial flight, the concave disc configuration inverts to a convex streamlined tear-drop shape.

3,695,142

RANGE SAFETY DEVICE

Harvey R. Benson, Dover, and Milton V. Ashley, Jr., Iselin, both of N.J., assignors to The United States of America as represented by the Secretary of the Army

Filed June 8, 1971, Ser. No. 151,084
Int. Cl. F41f *3/04*
U.S. Cl. 89—1.812 **11 Claims**



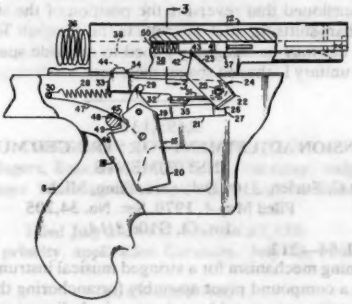
A range safety device for practice missiles is constructed to be mounted in the warhead of the missile to continuously monitor the entire flight of the missile. If the missile accelerates beyond prescribed limits of the guidance is wrong, the range safety device shuts off the rocket motor and destructs the warhead section, thus terminating the flight. The device independently monitors missile trajectory without the aid of ground based tracking equipment. The warhead section of the missile is only destroyed at a predetermined time after firing so as to avoid danger to the crew operating the missile.

3,695,143

FIRING MECHANISM FOR SEMIAUTOMATIC FIREARMS

Lee R. Frix, Knoxvile, Tenn., assignor to Volunteer Enterprises, Inc.

Filed May 5, 1970, Ser. No. 34,729
Int. Cl. F41c *5/02*
U.S. Cl. 89—145 **2 Claims**



A firing mechanism for gas-operated semiautomatic firearms including positive disconnect means.

3,695,144

SERVO FEED SYSTEM FOR MACHINE TOOL PROVIDED WITH LOCKING MECHANISM

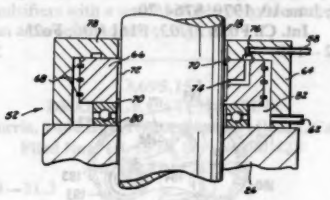
Thierry Goiffon, Ferney-Voltaire, France; Hans Rudolf Lehmann, Geneva, and Hubert Schaidl, Aire-Geneva, both of Switzerland, assignors to Ateliers des Charmilles S.A., Geneva, Switzerland

Filed Aug. 5, 1970, Ser. No. 61,219

Claims priority, application Switzerland, Aug. 7, 1969, 12073/69

Int. Cl. B23d *1/08*

U.S. Cl. 91—41 6 Claims



A locking mechanism for a hydraulically actuated movable rod member of a machine tool, such as the electrode tool holder of an electro-erosion machining apparatus, consisting of a locking member preferably in the form of an annular expansible member surrounding a linearly and/or angularly displaceable rod member and normally biased in engagement with the surface of the rod member. The annular member is supported by a stationary element of the machine and normally engages the rod member so as to immobilize it in a predetermined position as long as the machine servo mechanism is activated. When the machine servo mechanism is activated, pressurized fluid is introduced in a chamber dependent from the annular member, causing an expansion of the annular member releasing the rod member for normal actuation thereof by the servo mechanism.

3,695,145

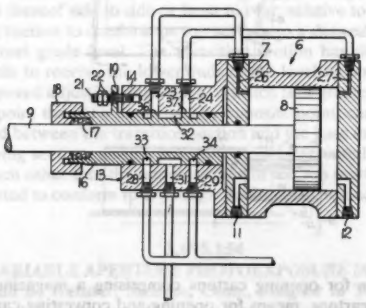
PISTON POSITION MONITOR

John M. Horn, York, Pa., assignor to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.

Filed Oct. 27, 1970, Ser. No. 84,298

Int. Cl. F15b *13/16*

U.S. Cl. 91—390 2 Claims



A device is disclosed which maintains the preset position of a reciprocating fluid servomotor. The device includes a spool valve with the spool connected to the servomotor piston rod. Any drifting of the servomotor piston causes the spool to open a port directing pressure fluid to the servomotor to return the piston to its preselected position.

3,695,146

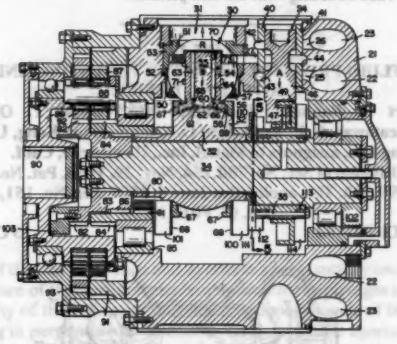
HYDROSTATIC MOTOR OR PUMP AND HYDROSTATIC TRANSMISSIONS

Elias Orshansky, Jr., San Francisco, Calif., assignor to URS Corporation, San Mateo, Calif.

Continuation of Ser. No. 657,731, July 31, 1967, abandoned. This application April 22, 1970, Ser. No. 28,289

Int. Cl. F01b *3/10*

U.S. Cl. 91—478 17 Claims



This radial-piston, stationary-block, variable displacement motor or pump has special features that enable it to operate far beyond the operating pressure and speed ranges of current hydrostatic motors. Hydrostatic bearings or shoes with multiple recesses at the base of each piston bear on a variable eccentric attached to the output shaft of the motor. The bearing recesses are supplied through two sets of orifices, one set open at all times and the other set open a greater proportion of the time at high-speed, low-stroke operation than at low-speed, high-stroke operation. Valving is done by spool valves driven by a shaft-mounted eccentric of fixed eccentricity, adjustable as to phase. The cylinders have spherical bearing surfaces and are so mounted that the entire cylinder can undergo the oscillating motion required to maintain the piston's centerline alignment with the center of the eccentric.

3,695,147

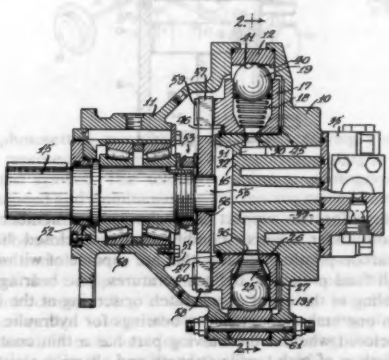
HYDRAULIC PUMP OR MOTOR

W. Wayne Siesennop, Milwaukee; Norman E. Gibbs, Hartland, and Edward S. Bartz, Milwaukee, all of Wis., assignors to Rex Chainbelt Inc.

Filed Jan. 20, 1970, Ser. No. 4,270

Int. Cl. F01b *13/06*

U.S. Cl. 91—498 2 Claims



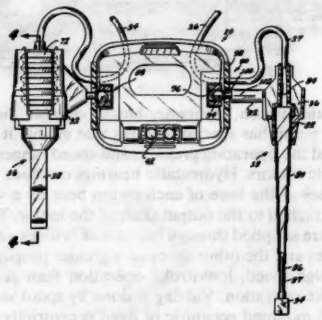
An hydraulic pump or motor and, more particularly, a low-speed high-torque motor wherein radial forces are balanced

by symmetrically opposed ball piston elements and there is a constant mechanical torque output or input throughout every revolution of the pump or motor and further having a construction including first and second casing parts, one of which mounts the cylinder block carrying the ball pistons and the other of which mounts a power shaft and with a sliding coupling between said shaft and cylinder block whereby assembly is facilitated and the cylinder block is free to adjust on its mounting as required for the ball pistons to follow the annular race coacting with the ball pistons.

3,695,148
FLUID-PRESSURE OPERATED THRUSTING AND ROTATING DEVICE

Albert R. Baginski, Torrance, Calif.; David T. Okada, Piscataway, N.J., and Edwin O. Stastny, Hong Kong, United Kingdom, assignors to Mattel, Inc., Hawthorne, Calif.

Division of Ser. No. 780,154, Nov. 29, 1968, Pat. No. 3,599,363. This application June 9, 1971, Ser. No. 151,403
Int. Cl. F01b *19/00*
U.S. Cl. 92—92 **3 Claims**

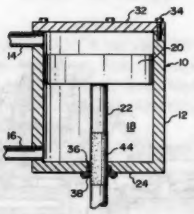


A thrust element mounted on the inner turn of a spirally-wound band, the spiral expanding lengthwise when pressured air is applied to it.

3,695,149
SEAL FOR RAM

Walter W. Eberhart, 645 Arbor Lane, Glenview, Ill.

Filed Oct. 23, 1970, Ser. No. 83,341
Int. Cl. F16j *1/02, 7/00, 11/04*
U.S. Cl. 92—168 **5 Claims**

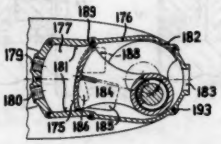


Bearings for the support of reciprocating members for operation under adverse conditions are disclosed having fluorocarbon-plastic interfaces that are capable of withstanding high fluid pressures and temperatures. The bearings are self-healing in the event of a scratch or scoring at the interface. In one embodiment sleeve bearings for hydraulic rams are disclosed wherein the moving part has a thin coat of a fluorocarbon of high tensile strength and abrasion resistance and the other part comprises a plastic body or seal formed of a different plastic such as Buna N, or polyurethane and the like or comprises a plastic body or seal such as fiber glass impregnated with a fluorocarbon, graphite on canvas, Nylon, Delrin and the like. The thin coating of fluorocarbon is applied by spraying at a temperature of about 600° F and must be without subsequent sintering.

3,695,150
CRANK ASSEMBLIES FOR MACHINES HAVING RECIPROCATING PISTONS

Willi Salzmann, Bielstrasse 111, Solothurn, Canton of Soleure, Switzerland

Filed July 13, 1970, Ser. No. 54,382
Claims priority, application Switzerland, July 18, 1969, 11159/69; June 10, 1970, 8764/70
Int. Cl. F01b *11/02;* **F16j** *1/00;* **Fo2f**
U.S. Cl. 92—169 **21 Claims**

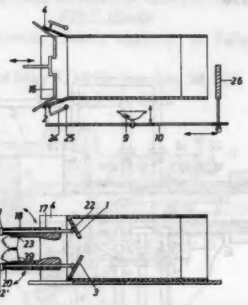


A crank assembly for reciprocating piston machines, especially internal combustion engines, wherein the connecting rod is articulated to the cylinder piston by means of a ball socket. The invention also contemplates a crank assembly arrangement where the piston is rigidly connected with the connecting rod and is pivotably and sealingly guided on its spherical peripheral surface in a ring having a spherical inner surface slidable along the wall of the cylinder.

3,695,151
MACHINE FOR OPENING CARTONS

Jean Caron, Bethisy-Saint-Pierre, France, assignor to Service d'Exploitation Industrielle des Tabacs et des Allumettes, Paris, France

Continuation of Ser. No. 807,522, March 17, 1969, abandoned. This application July 28, 1971, Ser. No. 166,923
Claims priority, application France, March 19, 1968, 68144306
Int. Cl. B31b *1/80, 5/26*
U.S. Cl. 93—53 BF **10 Claims**



Machine for opening cartons comprising a magazine for flattened cartons, means for opening and converting cartons to a parallelepipedal shape, means for transferring cartons, means for displacing the flaps with respect to the faces of the carton whereby presenting said cartons with the flaps closed at one end thereof, means acting transversely to the longitudinal axis of the carton in cooperation with said opening means, means for separating two opposite flaps of said end and whereby causing said flaps to move apart towards the exterior of their respective initial planes and constitute two guide

planes for the two other flaps of the said end and means for inwardly folding back said other flaps.

3,695,152

AQUEOUS SET INITIATORS FOR SLURRY SEALS

Peter E. Graf, Orinda, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Aug. 5, 1970, Ser. No. 61,521
Int. Cl. C09j *3/30*; C10b *55/00*; C10c *3/00*
U.S. Cl. 94—23 9 Claims

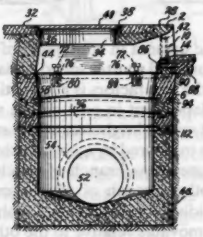
Quick-set slurry seals are provided by contacting a mixture of aggregate and bitumen emulsion employing sulfonate or sulfate emulsifiers with a water soluble polyvalent metal set initiator in an aqueous medium at high pH.

3,695,153

DRAINAGE CATCH BASINS

John P. Dorris, 1440 Bay Avenue, Newport Beach, Calif.

Filed Nov. 10, 1970, Ser. No. 88,423
Int. Cl. E01c *11/22*
U.S. Cl. 94—31.3 8 Claims



Drainage catch basin structures embodying dual level adjusting means, and comprising a rectangular top section containing a chamber with an elongated drainage water inlet communicating therewith and to be positioned in alignment with a street curb, said chamber having a rectangular outlet at its lower end; a base section having a generally circular interior and a water outlet; and an intermediate or transition section having a rectangular inlet conforming to the outlet of the top section and a circular outlet conforming with the upper end of the base section. The top section may have a non-skid surface cast therein and a man hole opening closed by a cover, and its marginal edges may be protected by angle iron to prevent chipping in use or in handling. The top section has four leveling bolts cast therein at its lower edge for effecting fine adjustment thereof side to side or front to rear, relative to an underlying section to conform its top surface to a desired side walk or street grade level. The transition section has sleeves cast therein to receive the lower ends of the leveling bolts. A pair of tapered adjusting rings, each of which is of greater height at one point than at a diametrically opposite point, can be interposed between the transition section and the base or other underlying section, and so positioned circumferentially relative to each other that the upper surface of the top section can be adjusted to conform to any major inclinations in road grade.

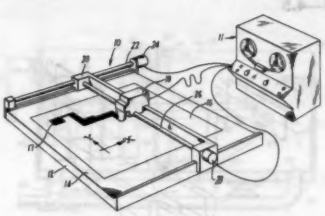
3,695,154

VARIABLE APERTURE PHOTOEXPOSURE DEVICE

Ronald B. Webster, Melrose, Conn., assignor to The Gerber Scientific Instrument Company, South Windsor, Conn.

Filed Sept. 15, 1970, Ser. No. 72,359
Int. Cl. G03b *29/00*
U.S. Cl. 95—1 R 7 Claims

In a photoexposure device for exposing lines on a photosensitive surface a rectangular aperture is used to form a rectangular spot of light projected onto the photosensitive surface and moved thereover to generate a line. During the exposure of a given line, the light spot is moved relative to the photosensitive surface in accordance with a velocity program which includes an acceleration stage at the beginning of the line, a deceleration stage at the end of the line, and possibly a constant velocity stage between the acceleration and deceleration stages. The width of the light spot, as measured in the direction of its travel, is varied in accordance with its velocity relative to the photosensitive surface to obtain distinct definition of the line at its ends and to obtain a substantially uniform exposure of the line along its length despite the changes in the velocity of the light spot. In one embodiment a pair of blades sliding in perpendicular directions form a variable aperture to determine the size and shape of the light spot. In another embodiment the source of light is a cathode ray tube, and the shape of the projected light spot is determined by the image on the face of the tube.

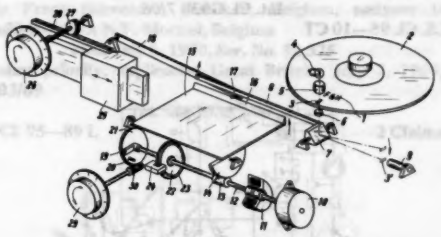


3,695,155

PHOTOSETTING METHOD AND MACHINE

Hans Guldenpfennig, Berlin, Germany, assignor to H. Berthold Messinglinienfabrik und Schriftiesserei AG., Berlin, Germany

Filed March 30, 1970, Ser. No. 23,788
Claims priority, application Germany, April 8, 1969, P 19 18 762.3
Int. Cl. B41b *17/42*
U.S. Cl. 95—4.5 8 Claims



A photosetting machine uses a matrix carrying a spacing mark representing the proper spacing corresponding to the associated symbol. The selected symbol is photographically reproduced and simultaneously the spacing mark is sensed to determined the proper spacing of the symbol on the reproduction. The sensed spacing is stored and is then used, immediately after completion of the photographic reproduction step, to control the transport of the photographic material by an amount corresponding to the desired spacing. Selection of a further symbol is carried out during the spacing transport movement. Means are described for scanning the spacing mark, adjusting the spacing of the photographic reproduction automatically on adjustment of the size of the image of the symbol, and for adjusting the reproduced spacing by a constant amount.

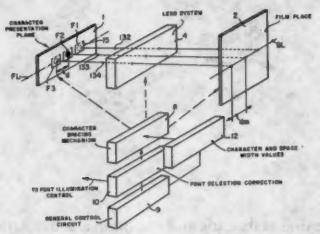
3,695,156
PHOTOCOMPOSING MACHINE

Louis M. Moyroud, c/o Photn Inc., 355 Middlesex Ave., Wilmington, Mass.

Continuation-in-part of Ser. Nos. 827,128, May 21, 1969, Pat. No. 3,643,559, and Ser. No. 690,720, Dec. 13, 1967, Pat. No. 3,590,705, and Ser. No. 843,297, July 22, 1969, Pat. No. 3,620,140. This application Nov. 12, 1970, Ser. No. 88,920

Int. Cl. B41b 21/22

U.S. Cl. 95—4.5 7 Claims



This invention relates to photographic type composing machines capable of automatically mixing a plurality of fonts, styles, or faces, and more particularly to machines presenting a selected character (from a given alphabet or font) at a common character presentation point from which its image is projected onto a light sensitive surface. The invention describes a method for rapidly changing from one character font to another solely by the utilization of either the character spacing mechanism of the machine, or the line spacing mechanism thereof.

3,695,157
CAMERA CONTROLS

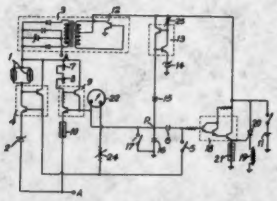
Seinan Miyakawa, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo-to, Japan

Filed April 14, 1970, Ser. No. 28,457

Claims priority, application Japan, April 17, 1969, 44/30093

Int. Cl. G03b 7/08

U.S. Cl. 95—10 CT 9 Claims



A camera capable of determining exposure time automatically in accordance with exposure-determining factors of film speed, aperture size, and object brightness. Upon opening of the shutter of the camera, to commence an exposure, a control capacitor starts its charging and discharging operations. This control capacitor is in series with a memory capacitor to which signals of the exposure-determining factors are transmitted. Both of these capacitors coact with a shutter-closing mechanism which is actuated in accordance with the signals transmitted to the memory capacitor for closing the shutter to terminate the exposure after an exposure time which is correct for the particular signals transmitted to the memory capacitor.

3,695,158
PHOTOGRAPHIC CAMERA

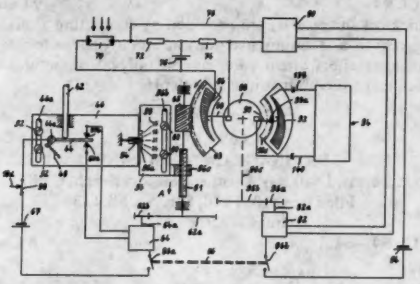
Paul Fahlenberg, Baierbrunn, Germany, assignor to Compur-Werk Gesellschaft mit beschraenkter Haftung and Co., Munich, Germany

Filed July 22, 1970, Ser. No. 57,038

Claims priority, application Germany, July 30, 1969, P 19 38 826.2

Int. Cl. G03b 7/10

U.S. Cl. 95—10 CE 11 Claims



A photographic camera in which one of the two factors of diaphragm aperture and shutter speed is manually presettable, and the other of the two factors is automatically set by electrical mechanism dependent in part on the value of the preset factor and in part on the brightness of the subject to be photographed, which is measured by a photoresistance. A balancing bridge circuit is used, one branch of which contains the photoresistance, another branch of which contains a resistance element and a sliding wiper element, each of these elements being separately movable relative to the other element. A first motor, controlled in part by the value of the presettable factor, moves the resistance element relative to the wiper element. A second motor, controlled by the balancing bridge circuit, moves the wiper element relative to the resistance element until the bridge is in balance. The movement of this second motor also sets automatically the value of the other exposure factor.

3,695,159
REFLEX CAMERA WITH AUTOMATIC EXPOSURE CONTROL

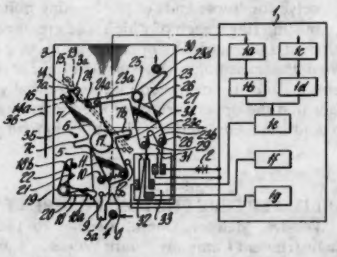
Kunio Mita, Tokyo-to, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed June 9, 1969, Ser. No. 831,485

Claims priority, application Japan, June 20, 1968, 43/42214

Int. Cl. G03b 7/08, 9/58, 19/12

U.S. Cl. 95—10 C 8 Claims



An automatic exposure timing system in a single lens reflex camera with a through the lens light measuring system includes a memory device and a shutter timing network. A first switch alternatively connects the memory device to the light measuring or timing network and a second switch connects a battery to the light measuring system and timing network. A

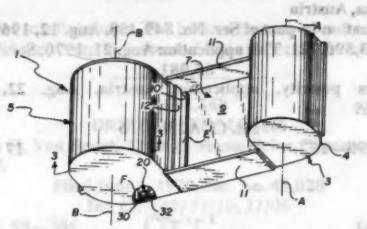
mirror return release member sequentially closes the second switch, actuates the first switch to connect the memory device to the timing network, and releases the mirror. The mirror return sequentially releases the automatic diaphragm and the shutter, and blocks the light measuring photocell. Closing of the shutter returns the switches to their initial condition.

3,695,160

FILM CARTRIDGE FOR PREVENTING THE END OF A FILMSTRIP FROM ENTERING A CARTRIDGE CHAMBER

Willis L. Stockdale, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 14, 1970, Ser. No. 63,879
Int. Cl. G03b *17/26*
U.S. Cl. 95—31 CA **12 Claims**



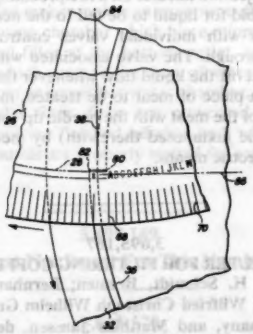
A tooth extends forwardly from a filmstrip engaging surface of a film cartridge for entering a perforation in the trailing end of a filmstrip loaded in the cartridge to preclude the entry of the trailing end into the cartridge take-up chamber, the trailing end being thereby rendered accessible to facilitate the withdrawal of the filmstrip from the cartridge.

3,695,161

ALPHANUMERIC PROJECTION DISC ASSEMBLY

Lawrence J. Mason, Webster, N.Y., and Louis F. Paradysz, East Randolph, Vt., assignors to Xerox Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 791,049, Jan. 14, 1969, abandoned. This application Nov. 19, 1970, Ser. No. 91,157
Int. Cl. G03b *15/00*
U.S. Cl. 95—85 **7 Claims**



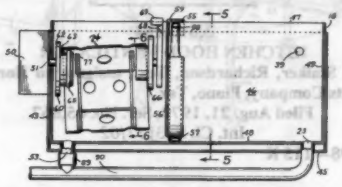
An alphanumeric recording system wherein a character disc having transparent character images thereon is rotated through an exposure zone so that selected characters may be projected by the energization of a flash lamp. The projected image is collimated and directed to a recording zone through which move lens-mirror units at a constant speed intercept the projected image and focus it onto a photoreceptive recording medium. The character disc rotates at a rate such that with the slits therein associated with respective characters inter-character spacing is assured. Dead time in the recording process is eliminated by the use of the collimated projected character image and plural interception of that image.

3,695,162

DEVELOPING MACHINE FOR PHOTOGRAPHIC FILM

Ray D. Wing, 4680 S.W. Upper Drive, Lake Oswego, Oreg.

Filed Aug. 17, 1970, Ser. No. 64,197
Int. Cl. G03d *3/00*
U.S. Cl. 95—89 R **10 Claims**



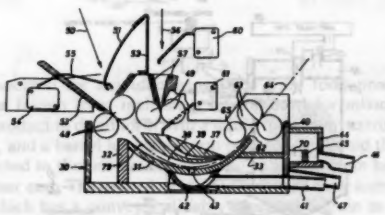
A developing machine for photographic film. The machine includes a covered tank having a developing trough secured therein. A perforated cylindrical sleeve surrounding a film reel is removably supported within the trough by circular hubs adapted to fit within the open ends of the cylinder. One hub is located at the end of the trough, eccentrically attached to the shaft of a motor mounted on the trough, for rotating and agitating the cylinder. The other hub is supported on a fence that can be adjustably positioned along the length of the trough to accommodate cylinders of different length. Fluid is admitted to an outer portion of the tank to control the temperature environment of the trough. A valve controlled fluid supply system is provided for sequentially furnishing developing, washing and setting solutions to the trough from remote containers. Inert gas such as nitrogen under pressure is used to propel these solutions from their containers. A programmable timer is provided to control the valves of the supply system and establish the time intervals and sequence of steps of a desired developing cycle.

3,695,163

PROCESSING APPARATUS FOR USE IN DIFFUSION TRANSFER COPYING

Emile Frans Stievenart, Hoboken, Belgium, assignor to Gevaert-AGFA N.V. Mortsel, Belgium

Filed July 6, 1970, Ser. No. 52,375
Claims priority, application Great Britain, July 7, 1969, 34,203/69
Int. Cl. G03d *3/00*
U.S. Cl. 95—89 L **2 Claims**



A processing apparatus for quickly obtaining, according to the silver complex diffusion transfer process, radiographic images of surgical interventions. The apparatus comprises separately driven pairs of inlet rollers for introducing an image-receiving sheet and a radiation-sensitive sheet in the processing liquid. The image-receiving sheet follows the upper path in the processing liquid and leads the radiation-sensitive sheet which follows the lower path. Edge guides which are curved in the longitudinal direction and which converge

towards each other in the transport direction of the sheets support the sheets in the processing liquid. A longitudinally curved guide plate is provided under the lower sheet path and has a plurality of openings through which processing liquid is pumped so as to cushion the sheet which follows said lower path. The driving of the inlet roller pairs is accomplished through control apparatus which creates a relative delay in the advance thereby of the image-receiving sheet in order that the leading edge of the radiation sensitive sheet may trail the same by a short distance.

3,695,164

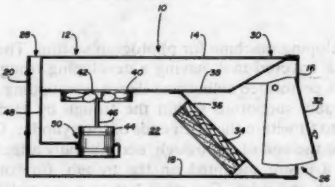
KITCHEN HOOD VENTILATOR

James E. Stalker, Richardson, Tex., assignor to Home Metal Products Company, Plano, Tex.

Filed Aug. 21, 1970, Ser. No. 65,867

Int. Cl. F23j *11/02*

U.S. Cl. 98—115 K **1 Claim**



A kitchen hood ventilator comprising a casing including a warm air inlet, a cool air inlet, and an air outlet. A filter is mounted in the casing in the path of air flowing through the warm air inlet, and a cool air duct extends through the casing from the cool air inlet to a cool air outlet. The kitchen hood ventilator further includes a propeller fan for moving warm air through the filter and from moving cool air through the cool air duct. The propeller fan is driven by a fan motor mounted in the path of cool air flowing through the cool air duct. This permits the use of a relatively small motor that operates at substantially full power when rotating the propeller fan.

3,695,165

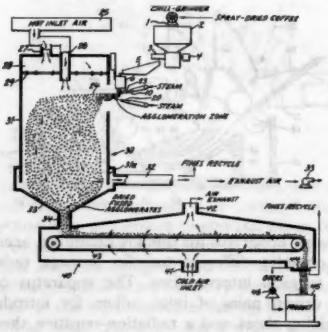
PROCESS AND APPARATUS FOR AGGLOMERATION

Boleslaw Sienkiewicz, Pearl River, and Ferdinand A. Bagley, Scotia, both of N.Y., assignors to General Foods Corporation, White Plaines, N.Y.

Division of Ser. No. 693,503, Dec. 26, 1967, Pat. No. 3,554,760. This application April 23, 1970, Ser. No. 43,310

Int. Cl. A23f *1/04*

U.S. Cl. 99—236 C **7 Claims**



A process and apparatus for agglomeration of powders, especially soluble coffee, involving the use of upper and lower jets of steam which impinge against at least one falling curtain of powder at a substantial angle so as to disrupt said curtain into agglomerates which are then wetted and redirected into a drying zone. The purpose of the upper jets of steam is to form agglomerates of varying size, density, and moisture content whereas the purpose of the lower jets of steam is to further wet the agglomerates and render them more uniform in density, size and moisture content while insuring that all of said agglomerates are projected into the drying zone.

3,695,166

APPARATUS FOR INJECTING TREATMENT FLUIDS INTO MEATS AND THE LIKE

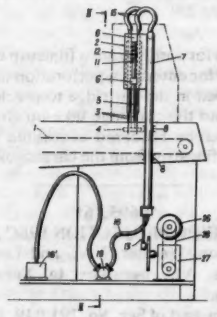
Louis Adolph Hoffmann, Gerasdorferstrasse 131, A-1210, Vienna, Austria

Continuation-in-part of Ser. No. 849,468, Aug. 12, 1969, Pat. No. 3,590,721. This application Aug. 21, 1970, Ser. No. 65,981

Claims priority, application Austria, Aug. 22, 1969, A 8100/69

Int. Cl. A23b *1/16*

U.S. Cl. 99—257 **17 Claims**



Meat to be pickled, carried on a conveyor, is penetrated by one or more injection needles on a reciprocating carrier which forms a manifold for liquid to be fed to the needle or needles through tubes with individual valves controlling the fluid supply therethrough. The valve associated with each needle, designed to cut off the liquid flow whenever that needle is not inserted into a piece of meat to be treated, may be actuated upon contact of the meat with the needle tip (or with the tip of ancillary needle juxtaposed therewith) by mechanical, fluid-operated or electric means.

3,695,167

FILTER FOR FILTERING COFFEE

Ernest G. F. H. Schmidt, Bremen; Bernhard Walkowsky, Maximilian; Wilfried Christoph Wilhelm Grote, Hannover, all of Germany, and Matthias Janssen, deceased, late of Hannover-Kleefeld, Germany (by Elizabeth Charlotte Janssen, executrix), assignors to Joh. Jacobs and Co., Bremen, Germany, by said Schmidt, said Walkowsky and said Grote

Filed Jan. 28, 1970, Ser. No. 6,492

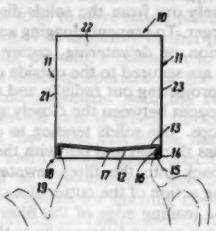
Claims priority, application Germany, Jan. 28, 1969, P 19 03 949.7

Int. Cl. A47j *31/00*

U.S. Cl. 99—306 **14 Claims**

A coffee filter having a square bottom sealed to four upright sides to form an open topped canister. The bottom and sides

are scored by cooperating fold lines whereby the filter may be collapsed to a flat shape. The bottom has one or more perforations and is covered by a sheet of filter paper on the inside.

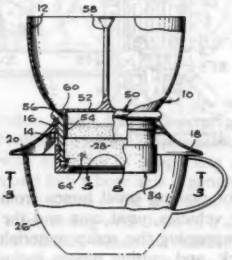


3,695,168

DRIP COFFEE MAKER

George H. Van Brunt, 1139 El Monte Drive, Thousand Oaks, Calif.

Filed June 2, 1970, Ser. No. 48,028
Int. Cl. A47j *31/10, 31/06*
U.S. Cl. 99—306 14 Claims



The drip coffee maker makes an aqueous coffee infusion by providing a brewing chamber which has a micro-pore (microscopic openings) filter at the bottom outlet, and water inlet control means which controls the entry of water into the brewing chamber from an upper hot water chamber. With a proper micro-pore outlet filter, fines are prevented from passing therethrough into the finished infusion and, with water inlet control, the grounds are properly wetted for extraction in the optimum time.

3,695,169

Patent Not Issued For This Number

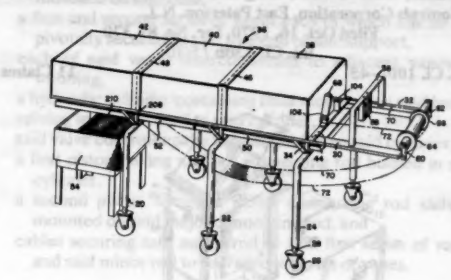
3,695,170

APPARATUS FOR COOKING FOODS

Gustave Ehrenberg, c/o 133 Golf Hills Rd., Havertown, Pa.

Filed Jan. 12, 1970, Ser. No. 2,053
Int. Cl. A47j *37/04*
U.S. Cl. 99—386 16 Claims

Food articles, for example steaks, are transported by a continuous, twistable conveyor chain through a path between a pair of electrical heating elements. The conveyor is guided so that the supporting surface provided by the conveyor is held in inclined relationship with respect to the vertical while passing between the heating elements. The heating elements are arranged to produce uniform heating of the food, but are disposed so that a space is provided between the heating elements, underneath the lowermost edge of the conveyor for drippage.

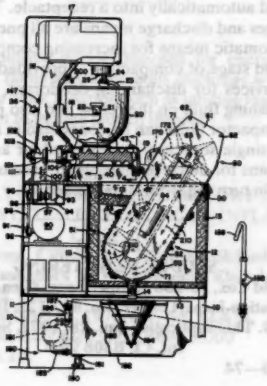


3,695,171

APPARATUS FOR MANUFACTURING A DEEP FRIED FOOD PRODUCT

Richard S. Hartley; George Churley, and F. Douglass Houser, all of Troy, Ohio, assignors to The Hobart Manufacturing Company, Troy, Ohio

Filed Feb. 18, 1970, Ser. No. 12,335
Int. Cl. A47j *37/12*
U.S. Cl. 99—404 8 Claims



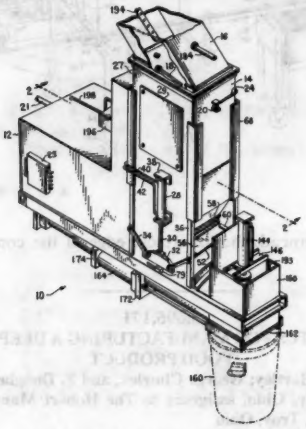
A machine for manufacturing deep fried food products, such as french fries, includes a mixing bowl for mixing the food product in dried form with a liquid to form an extrudable dough, and a barrel having a worm rotatably mounted therein connected to the bowl at one end and to an extrusion head at the other end. The extrusion head is mounted over a cooking well which has a conveyor slidably mounted therein to carry the extruded food product into and out of the well. At least one wall of the cooking well is inclined with respect to the vertical, which results in convection currents being set up in the well during cooking eliminating temperature stratification of the cooking medium and permitting lower cooking temperatures. The conveyor, extrusion die and worm drive are interconnected to provide automatic indexing of these three components with respect to each other and a drainage unit may be associated with the machine for periodically filtering the cooking medium and recirculating it to the cooking well.

3,695,172

AUTOMATIC REFUSE COMPACTION SYSTEM

John P. Cleary, Valley Cottage, and Abraham Schulkin, Mamroneck, both of N.Y., assignors to International Pollution Controls Corporation, East Paterson, N.J.

Filed Oct. 16, 1970, Ser. No. 81,370
Int. Cl. B30b *15/30*
U.S. Cl. 100—45 11 Claims



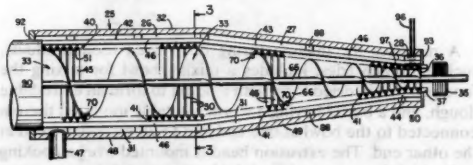
An automatic refuse compaction system includes a compactor unit having first and second stages of refuse compaction operating respectively vertically and horizontally in sequence. Refuse is compacted in a compaction chamber from which it is discharged automatically into a receptacle. The refuse compaction stages and discharge means are all pneumatically controlled. Automatic means for increasing compaction pressure in the second stage of compaction is provided. Pneumatically operated devices for discharging deodorant, insecticide and fire extinguishing fluid on the refuse are also provided. A plurality of compactor units can be connected in a pneumatic circuit with a single source of compressed air and programmed selector means for delivering air under pressure to each compactor unit in turn requiring compressed air.

3,695,173

SLUDGE DEWATERING

Clyde Harold Cox, 35-236 Juniper Lane, Glen Ellyn, Ill.

Continuation-in-part of Ser. No. 887,125, Dec. 22, 1969, abandoned. This application Jan. 28, 1972, Ser. No. 221,725
Int. Cl. B30b *9/06*
U.S. Cl. 100—74 29 Claims



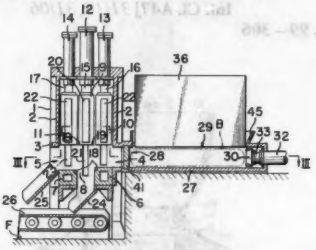
Sludge dewatering is achieved with the aid of a flow-impeding, continuous, self-cleaning, non-blinding or clogging and permanent filtering-dewatering device. The device is partly cylindrical and partly conical and comprises closely spaced rings or hoops held rigid by a frame. Inlet pressure created by a low-pressure sludge pump along with the movement of sludge through the filter-dewatering unit, where squeezing and pressing takes place, forces most of the liquid or water associated with the sludge through the filtering medium or slots formed by successive closely spaced filter rings, while the solids are trapped on the inside surface before they are conveyed along the length of the filter-dewatering unit and are discharged relatively dry from the solids-discharge end by a filter-cake discharger. To prevent clogging and interruption of continuous filtration or dewatering, cutter or slot-cleaning blades or brushes are secured to the outside edge of the filter-cake discharger, projecting out radially and spaced to extend into the slots or spaces between the closely spaced successive filter rings or hoops. The solids tending to clog or blind the slots or spaces pass through and out with the filtrate, or they may be forced back into the filter-dewatering unit by the cutting or cleaning action of the cutter-slot cleaning blades or brushes, when the leading edge of the filter cake discharger and conveyed sludge cuts and scrapes away the solids protruding within the filter-dewatering unit.

3,695,174

APPARATUS FOR FORMING SMALL LUMPS FROM SCRAP MATERIALS

Kunitoshi Tezuka, 14-3, 6-chome, Higashi-suna, Koto-ku, Tokyo, Japan

Filed March 30, 1970, Ser. No. 23,786
Int. Cl. B30b *9/32*
U.S. Cl. 100—95 5 Claims



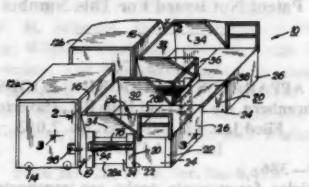
Apparatus for making small lumps from scrap materials, such as motor vehicles, used cars and the like, comprising means for compressing the scrap materials into a compact columnar block, and cutting means including at least two spaced and juxtaposed lower shearing dies, and at least one upper shearing die adapted to be reciprocable into the space between said lower shearing dies, whereby it is possible to form small lumps of high compactness from scrap materials, such as used cars.

3,695,175

DUAL COMPACTOR ASSEMBLY

Arthur E. Bausenbach, Rockville Centre, and Frank Palopoli, Massapequa Park, both of N.Y., assignors to Sanitary Controls, Inc., Deer Park, N.Y.

Filed May 22, 1970, Ser. No. 39,897
Int. Cl. B30b *15/06*
U.S. Cl. 100—193 6 Claims



A compactor assembly for loading refuse into refuse containers. The refuse containers are the type having a dumping door in which there is a loading aperture. The assembly in-

cludes a pair of hoppers which are situated side-by-side in a frame. Each hopper has a refuse exit on one side and each hopper has a ram which is mounted for movement through its charging chamber so as to drive refuse placed into the hopper out the refuse exit. The assembly further includes hydraulic coupling means for drawing a container to and against each hopper, with the loading aperture of the refuse container being brought into alignment with the refuse exit of the hopper, so that as the ram is driven through the hopper, it forces refuse out the refuse exit of the hopper, through the loading aperture and into the refuse container. Controls are provided so that an operator can selectively actuate the hydraulic coupling means for drawing the containers to the hoppers, and for driving the rams within the hoppers.

3,695,176

MACHINE FOR PRINTING ON CUPS AND THE LIKE

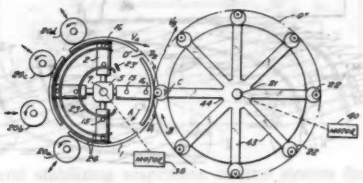
Humphrey Alphons Victor Van Der Roer, 174 Olympiaplein, Amsterdam, Netherlands

Filed June 22, 1970, Ser. No. 48,116

Claims priority, application Switzerland, June 21, 1969, 9606/69

Int. Cl. B41f *17/28*

U.S. Cl. 101—39 **10 Claims**



A printing cylinder, divided into several peripheral segments which are limitedly radially displaceable on a rotating first hub, coacts with an array of supporting arms radiating from a rotating second hub whose axis is generally parallel to that of the first hub, the orbits of the segments in an outwardly extended position intersecting with those of a set of revolving cups carried on individually rotatable mandrels on the supporting arms. The segments or the mandrels are additionally tiltable about pivotal axes lying in their plane of rotation in order to compensate not only for disparities in the wall thickness of different cups but also for nonuniform wall thickness of a single cup to be imprinted.

3,695,177

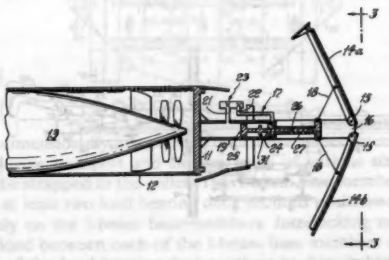
AIR BRAKE FOR AIRBORNE MISSILES

George Chakoian, Lincoln, and Russell T. Crowell, East Greenwich, both of R.I., assignors to The United States of America as represented by the Secretary of the Navy

Filed Sept. 17, 1964, Ser. No. 397,343

Int. Cl. F42b *25/02*

U.S. Cl. 102—4 **4 Claims**



1. An apparatus for use in controlling the descent of airborne missiles comprising:

an airframe,

a platform type base mounted on said airframe,

an upstanding support type structure having a free end mounted on said base,

a first and second series of vanes each of which has an end pivotally secured to said free end of said support,

each of said vanes interconnected to adjacent vanes by webbing,

a hydraulic cylinder containing fluid mounted on said base,

valving means secured to said cylinder,

said valve controlling the flow of fluid from said cylinder,

a first piston having a major connecting rod housed in said cylinder,

a second piston having a minor connecting rod slidably mounted on said major connecting rod, and

cables securing said major rod to said first series of vanes and said minor rod to said second series of vanes.

3,695,178

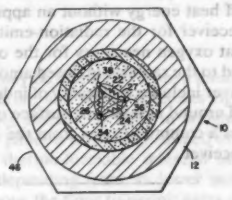
DELTA SQUIB CIRCUIT

Robert E. Betts, 8107 Hogan Dr. S.E., Huntsville, Ala.

Filed Nov. 9, 1970, Ser. No. 87,755

Int. Cl. F42c *19/12*

U.S. Cl. 102—28 R **4 Claims**



An electroexplosive device disposed for energization for creating a spark flame and/or gaseous discharge which is utilized to perform a work function such as igniting the propellant igniter in a rocket to initiate launch thereof.

3,695,179

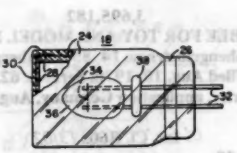
ELECTRICALLY ACTUABLE IGNITOR FOR PASSENGER RESTRAINT SYSTEM EMPLOYING AN INFLATABLE CUSHION

Nicholas J. Rainone, Clifton, and Jacob F. Michael, Paramus, both of N.J., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Nov. 24, 1970, Ser. No. 92,474

Int. Cl. F42c *19/12*; **B60k** *35/00*

U.S. Cl. 102—70.2 R **9 Claims**



A reliable and inexpensive ignitor for rapidly "firing" the combustible gas-producing charge of an inflatable-cushion type safety apparatus for motor vehicles. The ignitor preferably comprises a modified AG ½ photoflash lamp assembly which has an open-ended glass tube instead of the sealed glass envelope normally employed and is devoid of shredded foil. The open end of the tube is sealed by a plastic diaphragm which ruptures when a predetermined amount of primer inside the tube is ignited by passing electric current through a wire filament that is embedded within the primer.

3,695,180

PYROTECHNIC RADIATOR CONSTRUCTION

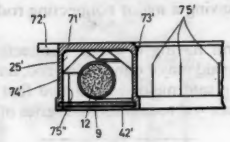
Gunter Stetter, and Ullrich Reinemann, both of Munich, Germany, assignors to Messerschmitt-Bolkow-Blohm Gesellschaft mit beschrankter Haftung, Munich, Germany

Filed Nov. 10, 1970, Ser. No. 88,441

Claims priority, application Germany, Nov. 15, 1969, P 19 57 524.7

Int. Cl. F42b *11/16, 13/34*

U.S. Cl. 102—87 **10 Claims**



A pyrotechnic radiator comprises a radiation-emitting body and an energy source heating it. The radiator is particularly adapted for use in locating moving bodies such as guided missiles using infrared equipment. The radiation-emitting body comprises a thin-walled tube which is formed by bending into the desired geometry for locating it in a receiver. The energy source comprises a pyrotechnic incandescent composition which gives off heat energy without an appreciable evolution of gas. The receiver for the radiation-emitting body is constructed so that oxygen necessary for the optimum radiation yield can be fed to the radiator in dosed amounts. For this purpose, the receiver includes a plurality of individual slots which are distributed around at least one surface of the exterior and which provides a communication from the exterior to the interior of the receiver.

3,695,181

SUB-CALIBER PROJECTILE

Gerald V. Bull, St. Bruno, Quebec, Canada, and Luis M. Palacio, Newport, Vt., assignors to Space Research Corporation, North Troy, Vt.

Filed March 12, 1970, Ser. No. 19,057

Int. Cl. F42b *31/00, 13/16*

U.S. Cl. 102—93 **2 Claims**

A projectile has a sabot including a plurality of separate angular segments secured in place around the projectile by an annular band surrounding the segments. The segments and the projectile, and the segments and the band, have intermeshing surfaces to enable thrust and spin to be imparted to the projectile by the sabot. The projectile may have a pair of such sabots, one sabot being mounted adjacent to the rear end of the projectile, and the other sabot being mounted in a forward position.

3,695,182

TURNTABLE FOR TOY AND MODEL RAILROADS

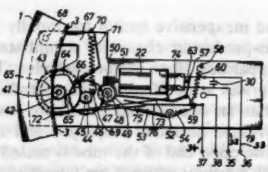
Max Ernst, Lohengrinstrasse 14, 85 Nurnberg, Germany

Filed Aug. 10, 1970, Ser. No. 62,458

Claims priority, application Germany, Aug. 8, 1969, P 19 40 333.9

Int. Cl. B60s *13/02*

U.S. Cl. 104—38 **10 Claims**



A turntable structure, especially for toy and model railroads, in which the turntable, with at least one set of tracks thereon, is rotatably supported by a frame and is adapted for being driven in rotation by an electric motor in the frame via a speed reducing transmission. An arresting device arrests the turntable in rotated positions wherein the set of tracks thereon align with stationary sets of tracks leading to the turntable. The arresting device operates a holding switch to keep the motor energized while the turntable moves from one position to the next. The transmission is normally disconnected from the motor and a flyweight arrangement driven by the motor connects the transmission thereto when the motor runs.

3,695,183

SLIDERS AND LOCKING ARRANGEMENTS FOR INTEGRATOR PLATFORMS

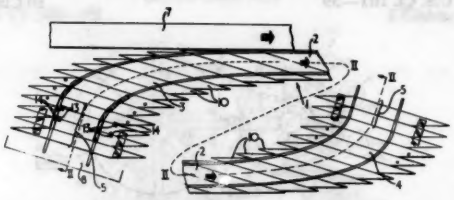
Paul Zuppiger, Geneva, Switzerland, assignor to Battelle Memorial Institute, Carouge, Geneva, Switzerland and Dunlop Holdings Limited, London, England

Filed June 2, 1971, Ser. No. 149,175

Claims priority, application Great Britain, June 10, 1970, 28,110/70

Int. Cl. B65g *17/06*

U.S. Cl. 104—25 **20 Claims**



A platform conveyor having a constant speed high-speed section and variable-speed sections at either end, the platforms being adapted to slide relative to one another in the variable-speed sections and locking and sliding mechanism for connecting the platforms. The locking and sliding mechanisms allow platform movement and prevent platform movement as required.

3,695,184

Patent Not Issued For This Number

3,695,185

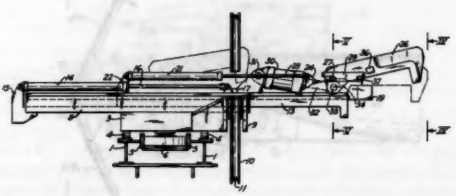
RAILROAD CAR POSITIONER

Bennie A. Rose, Mount Lebanon, Pa., assignor to Heyl & Patterson, Inc., Pittsburgh, Pa.

Filed June 2, 1971, Ser. No. 149,150

Int. Cl. B61j *3/00*

U.S. Cl. 104—176 **7 Claims**



A carriage, movable back and forth parallel to a line of coupled cars on a track, supports a horizontally sliding jaw which

can be moved horizontally away from one side of the carriage. The outer end of the jaw is shaped to substantially engage one side of the coupler between a pair of coupled cars, and means are provided for pivotally connecting the inner end of a jaw hook to the sliding jaw on a transverse axis with the hook normally inclined upwardly away from the outer end of the sliding jaw and having a downwardly projecting outer end. After the outer end of the hook has passed over the coupler, means are operative for swinging the hook down and for moving the pivotal means and hook inwardly along the sliding jaw to pull the outer end of the hook close to the coupler. Movement of the carriage, now connected with the coupler, will move the cars along the track to the desired position.

3,695,186

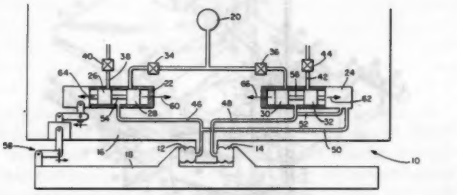
LATERAL CAR STABILIZING SYSTEM

James M. Herring, Jr., Merion Station, Pa., assignor to The Budd Company, Philadelphia, Pa.

Filed July 6, 1970, Ser. No. 52,312

Int. Cl. B61f *5/10, 5/24, 5/38*

U.S. Cl. 105—171 **9 Claims**



A lateral stabilizing suspension control system for counteracting lateral unbalancing forces against a railcar includes air springs responsive to such unbalancing forces. Pressurized fluid is applied to or released from the air springs to counteract the unbalancing forces. Means are also provided to assure that the total pressure in the air springs is relatively constant to provide a uniform spring rate during operation.

3,695,187

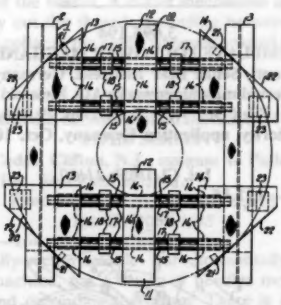
ADJUSTABLE PALLET

LeRoy Weiss, 1812 Tragone Dr., Pittsburgh, Pa.

Filed Oct. 9, 1970, Ser. No. 79,492

Int. Cl. B65d *19/18*

U.S. Cl. 108—54 **8 Claims**



A dimensionally adjustable knockdown pallet for supporting during transport and storage loads of various sizes that may be strapped to the pallet. Two I-beam base members support at least two load bearing deck sections positioned transversely on the I-beam base members. Interlocking means is provided between each of the I-beam base members and the ends of the load bearing deck sections to detachably secure the ends of each of the deck sections at any selected position along the length of the I-beam base members, the position selected dependent upon the size of the load to be placed on the pallet.

3,695,188

PALLET OF MOLDABLE OR THERMO-FORMABLE MATERIAL

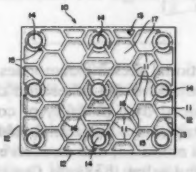
David Lloyd Granatstein, Toronto, Ontario, Canada, assignor to Steve Z. Dasovic

Filed May 28, 1971, Ser. No. 147,863

Claims priority, application Canada, March 19, 1971, 108178

Int. Cl. B65d *19/18*

U.S. Cl. 108—58 **7 Claims**



A pallet which may be fabricated from a mouldable or thermo-formable material, and which possesses rigidity over the entire load bearing surface, is light in weight and easy to manufacture. The pallet is preferably formed of a single sheet of mouldable or thermo-formable material incorporating a plurality of legs depending from its lower surface so as to space the same above the floor to permit entry of any suitable lifting mechanism thereunder, and is provided with a network of interconnecting ribs projecting downwardly from the lower surface of the pallet and forming a network of corresponding channels in the load supporting upper surface of the pallet, the ribs and channels being arranged in a particular pattern, characterized by an absence of channels crossing one another, and at least one of said channels meeting each leg.

3,695,189

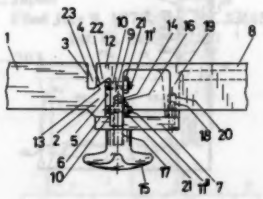
REMOVABLE EXTENSION PLATE

Johann Felder, Jr., Salzbergstrasse 26, 6060 Absam, Austria

Filed July 13, 1970, Ser. No. 54,340

Int. Cl. A47b *1/00*

U.S. Cl. 108—65 **5 Claims**



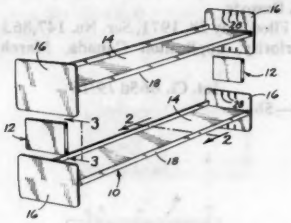
A removable extension plate for a work supporting table with projections on said plate and table having inclined faces engageable with one another. The plate is vertically adjustable at its inner end that is connected to the table and angularly adjustable at its free end to permit the surface of the plate to coincide with the surface of the table.

3,695,190

KNOCKDOWN SECTIONAL SHELVING

Allan A. Bucholz, Gig Harbor, Wash., assignor to Monitor Cabinets, a Division of Comerco, Inc., Tacoma, Wash.

Filed Aug. 5, 1970, Ser. No. 61,270
Int. Cl. A47b *45/00*
U.S. Cl. 108—91 **2 Claims**



Knockdown sectional shelving comprises a plurality of shelf units arranged one above the other and demountably interconnected and spaced by a plurality of connectors. Each of the shelf units comprises a horizontal shelf having a pair of vertical end pieces mounted, one on each end of the shelf and projecting above and below the same. One of the connectors is interposed between and bears against the end pieces of each adjacent pair of shelf units. Tongue and groove means demountably interconnect the end pieces and connectors. Where the end pieces are planar, the projections thereof constitute the tongues which cooperate with grooves on the connectors in interconnecting the two elements of the assembly. The shelving thus may be demountably assembled in various multiples and configurations to meet the requirements of contemplated end uses.

3,695,191

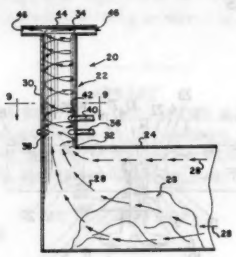
Patent Not Issued For This Number

3,695,192

COMBUSTION PRODUCT PROCESSING DEVICE AND METHOD

Joe W. Von Brimer, 3664 Vegas Plaza Dr. Apt. 2, Las Vegas, Nev.

Filed Oct. 12, 1970, Ser. No. 79,892
Int. Cl. F23g *5/12*
U.S. Cl. 110—8 A **18 Claims**



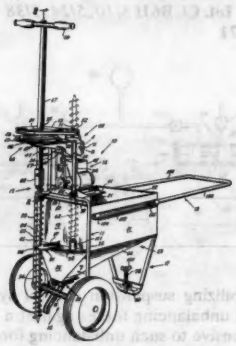
A combustion product processing device for use with a furnace or other burner which includes means for imparting a helical flow pattern to an influent gas stream entering a smokestack generally axially thereof wherein the stack has inlets for additional combustion air and means such as a gas jet or the like to promote ignition of at least those portions of the combustion products passing nearest the sidewalls. The tangentially injected, higher velocity gases impart a swirling action to the slower, axially flowing combustion products, causing an overall helical combustion product flow pattern, resulting in virtually complete combustion of the products. By reason of longer dwell or residence time within the tack, higher pressures caused by centrifugal force, and higher temperatures causing combustion rate increases, greatly decreased emissions result. In one embodiment the top or outlet end of the stack is fitted with a heavy particle separator adapted to collect particulate residues, or denser gases for subsequent treatment or collection, and in most other embodiments, means are filled at the outlet end of the stack to minimize axial flow and promote helical flow therefrom.

3,695,193

FERTILIZER APPLYING APPARATUS

Gary H. Maier, Des Moines, Iowa, assignor to Ferti-Feeder, Inc., Des Moines, Iowa

Filed March 30, 1970, Ser. No. 23,908
Int. Cl. A01c *5/02*
U.S. Cl. 111—93 **5 Claims**



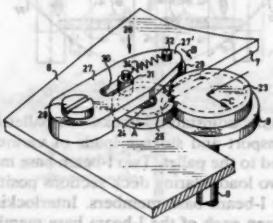
The apparatus is comprised of a portable fertilizer container formed with a forwardly and downwardly shaped bottom wall that has a discharge opening located adjacent the front end of the container. A frame structure on the container supports a motor and a motor driven hole-boring auger which is located forwardly of the container. A discharge chute directs material from the discharge opening into a bored hole on axial movement of the auger to an elevated position above the lower terminal end of the chute. Flow of material into the hole is controlled by a valve means that is operable to open and close the discharge opening.

3,695,194

TEMPLATE FOLLOWER MECHANISM

Alfred Heimann, Senne near Bielefeld, Germany, assignor to Kochs Adlernahmaschinenwerke AG, Bielefeld, Germany

Filed Oct. 9, 1970, Ser. No. 79,506
Claims priority, application Germany, Oct. 10, 1969, P 19 51 056.6
Int. Cl. D05b *21/00*
U.S. Cl. 112—121.15 **2 Claims**



A mechanism for use in automatic and template-controlled machine tools and especially in automatic sewing machines in

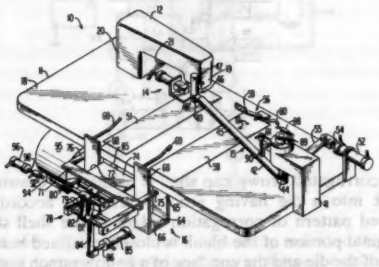
which a magnetic roller rolls along the peripheral edge of the template, for causing an automatic and safe driving of the roller out of the internal corner. This mechanism includes a gear pinion coaxial with the magnetic roller, a gear wheel mounted adjacent to the internal corner, and having a crank pin, an one armed lever pivoted on the template and having an oblong hole in which the crank pin engages, and a roller pivoted on the lever and bearing against the gear pinion, for driving the magnetic roller out of the corner.

3,695,195

TOP STITCH COLLAR STACKER METHOD AND APPARATUS

Wade W. Frost, Vidalia, Ga., assignor to Oxford Industries, Inc., Atlanta, Ga.

Filed Sept. 21, 1970, Ser. No. 73,729
Int. Cl. D05b *33/00*
U.S. Cl. 112—121.29 **9 Claims**



A collar stacker wherein shirt collars are automatically moved from a sewing machine where they received the top stitch about the edge of the collar structure to a stack of collars. A conveyor arm oscillates back and forth across the work table behind the sewing machine, and an engaging pin moves in a downward direction from the conveyor arm toward the work table and into engagement with the collar while the conveyor arm moves away from the sewing machine to the stacker mechanism to drag the collar to the stacker mechanism. The stacker mechanism includes a stationary basket having its upper opening at the edge of the work table, and a stacker tray is movable into the basket at a position approximately coextensive with the top surface of the work table to receive the collars, and then movable out of the basket to withdraw from the basket and allow the collar to drop in an orderly manner to the bottom of the basket. A cutter mechanism is arranged to automatically cut the threads extending between the sewing head and the collar as the collar is moved toward the basket.

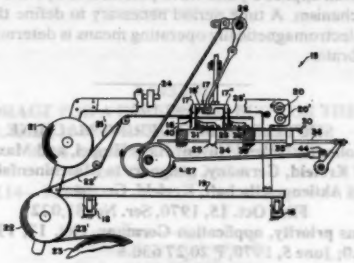
3,695,196

MULTI-NEEDLE SEWING MACHINES, SIMULATING PIPED SEAMS

William V. Codos, Clifton, N.J., assignor to Pathe Equipment Company, Inc., East Paterson, N.J.

Filed July 6, 1970, Ser. No. 52,625
Int. Cl. D05b *1/08*
U.S. Cl. 112—164 **8 Claims**

A vertically-reciprocatable bar horizontally positioned across the machine, has a series of needles mounted on its front face and depending therefrom. There is a companion needle for each of the front needles, depending from the back surface of said bar. Under this needle bar, is a work-supporting carriage mounted for movement in a direction along this bar. Pinch rollers on this carriage, feed web material off supply rolls, through the machine past the needles. Cam means control carriage movement and pinch roller operation. For each pair of needles there is one slide shuttle; all shuttles being on a second carriage. A main rotating shaft is associated with mechanism to reciprocate the needle bar and the shuttles' carriage. The work-supporting plate has one slot for each pair of needles to pass through to and from the shuttle zone. Shuttle movement is either in a direction through the machine



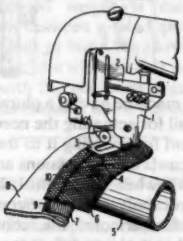
or in an oblique direction. For ordinary seams, the rear needles are removed.

3,695,197

APPARATUS FOR FELLING LININGS ON FUR GARMENTS

Winfried Rau, Turkenfeld, Germany, assignor to J. Strobel & Soehne, Spezial-Naehmaschinen-Fabrik, Postfach, Germany

Filed Sept. 18, 1970, Ser. No. 73,531
Claims priority, application Germany, Nov. 14, 1969, P 19 57 251.1
Int. Cl. D05b *7/14*
U.S. Cl. 112—177 **5 Claims**



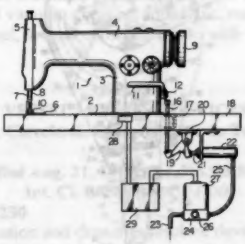
A double lock-stitch blind-stitch sewing machine with a lower cloth feeder installed in such a manner that, upon feeding the cloth, it will move only parallel to the stitchplate and sufficiently downward in relation to the thickness of heavy material such as fur for felling linings on fur garments.

3,695,198

SEWING MACHINE FOR AUTOMATIC BACKTACKING

Hitoshi Sakashita, Toyota, and Tsutomu Mitsui, Chieyu, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Aichi Perf., Japan

Filed July 9, 1970, Ser. No. 53,452
Int. Cl. D05b *27/00*
U.S. Cl. 112—203 **9 Claims**



A sewing machine for automatically making a backtacking stitch against unstitching at a terminal of a stitch by alternately

repeating short forward feed and backward feed. An electromagnetically operating means which controls the feeding mechanism applies a pulse wave potential to operate the feeding mechanism. A time period necessary to define the action of the electromagnetically operating means is determined by a multivibrater.

3,695,199

SHUTTLE EMBROIDERING MACHINE

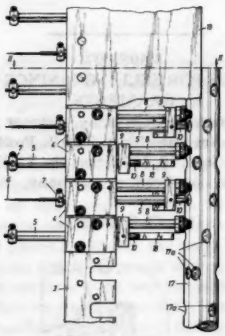
Hans Rolauffs; Hubert Hoven; Hans Hippel, and Max Schafer, all of Krefeld, Germany, assignors to Maschinenfabrik Carl Zangs Aktiengesellschaft, Krefeld, Germany

Filed Oct. 15, 1970, Ser. No. 81,022

Claims priority, application Germany, Oct. 17, 1969, P 19 52 307.0; June 5, 1970, P 20 27 630.6

Int. Cl. D05b *55/14*

U.S. Cl. 112—221 **11 Claims**



An embroidering machine having a plurality of reciprocable needle bars and a rail for actuating the needle bars. Each needle bar carries a pawl for coupling it to the rail and a control shaft engaging the pawls has depressions arranged thereon for controlling the pawls when the control shaft is turned. The turning of the control shaft may be programmed in any suitable manner and, furthermore, the control shaft can be exchanged for another having a different pattern of pawl controlling depressions.

3,695,200

THREAD PULL-OFF AND WIPING MECHANISM FOR SEWING MACHINES

Reinhold Papajewski, Buchig, and Johann O. Kleinschmidt, Blankenloch, Buchig, both of Germany, assignors to The Singer Company, New York, N.Y.

Filed June 4, 1971, Ser. No. 149,968

Int. Cl. D05b *49/00*

U.S. Cl. 112—243 **8 Claims**

A thread pull-off and wiping mechanism for sewing machines in which thread-engaging pull-off and thread wiping elements are reciprocated by a spring-returned linkage that may be detained in an inoperative position by a latch device, which, when released permits the linkage to assume an operative relation to a drive element operating in timed relation with the sewing machine thread take-up mechanism.

3,695,201

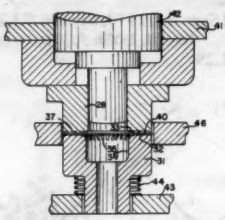
METHOD AND APPARATUS FOR MAKING CORRUGATED CROWN CAPS

Henry E. Frankenberg, Hinsdale, Ill., assignor to Continental Can Company, Inc., New York, N.Y.

Filed Sept. 17, 1970, Ser. No. 72,947

Int. Cl. B21d *51/00, 22/00*

U.S. Cl. 113—121 A **4 Claims**



A corrugated crown cap shell is formed by drawing a disc blank into a die having grooves arranged according to a desired pattern of corrugation ridges in the shell skirt. The marginal portion of the blank is closely confined between the face of the die and the end face of a hollow punch surrounding the draw punch. The blank is most closely confined around the margin thereof at points along the edge on the lines of the grooves. For this purpose, the punch end face is provided with a series of radial ribs aligning with the die grooves along the die face. The differential restraint thus effected against the margin of the blank induces buckling thereof along and toward the lines of the die grooves to form corrugation ridges corresponding to the pattern defined by the draw die. Clearances and pressure relief are so established as to provide a substantially free draw, obviating ironing, cold-pressing or deep-drawing the material.

3,695,202

Patent Not Issued For This Number

3,695,203

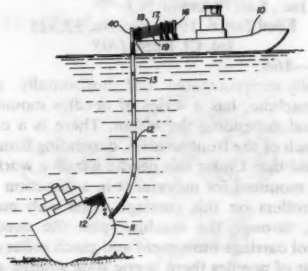
SUBMERGED VESSEL RAISING APPARATUS

Jim D. Helbig, Brighton, Colo., assignor to Cyclo Manufacturing Company, Denver, Colo.

Filed Dec. 2, 1970, Ser. No. 94,461

Int. Cl. B63c *7/12*

U.S. Cl. 114—50 **8 Claims**



Submerged vessel raising apparatus which comprises one or more tubes into which buoyant elements are loaded by suc-

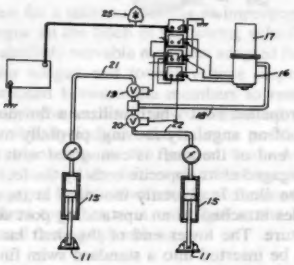
tion, pressurized in batches, and when pressurized travel in the tube by gravity to a delivery conduit leading into the vessel to be raised, including pressurizing means by which the air in the tube is overpressurized to at least 20 pounds in excess of the ambient water pressure at the point of delivery of the buoyant elements into the sunken vessel.

3,695,204

POWER BOAT WITH TRIM TABS

Charles H. Bennett, 20400 Nine Mile Road, St. Clair Shores, Mich.

Filed Sept. 17, 1970, Ser. No. 73,166
Int. Cl. B63b *1/28*
U.S. Cl. 114—66.5 P **9 Claims**



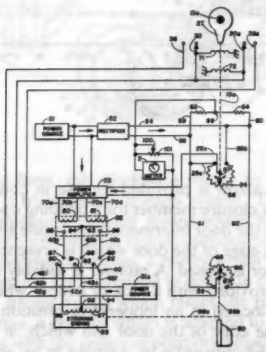
A boat with a pair of trim tabs adjustably mounted thereon and control means for changing the orientation of each trim tab with respect to the boat independently of the other. The control means includes a single actuator which is operable in one plane to simultaneously move both trim tabs, in another plane to move one trim tab and in a third plane to move the other trim tab. An indicia plate is associated with the control means to orient the control means with respect to the boat.

3,695,205

COMBINATION LEVER SHIP'S STEERING SYSTEM

William G. Thomas, Charlottesville, Va., assignor to Sperry Rand Corporation

Filed Nov. 5, 1970, Ser. No. 87,213
Int. Cl. B63h *25/14*
U.S. Cl. 114—144 R **7 Claims**



A compact combination lever ship's steering system is disclosed having unitary control features permitting ready selection of either of two preferred modes of operation. The ship's pilot may select lever operated proportional control of the ship's rudder steering engine with a direct display of rudder position for reference. The same combination lever control may be used for direct control of the ship's steering engine, rudder position again being displayed.

3,695,206

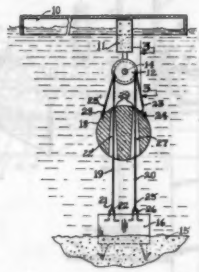
Patent Not Issued For This Number

3,695,207

ANCHORAGE FOR A BOAT DOCK, BUOY OR THE LIKE

Gerald D. Atlas, 2940 West Balmoral, Chicago, Ill.

Filed Aug. 17, 1970, Ser. No. 64,280
Int. Cl. B63g *21/24*
U.S. Cl. 114—206 R **2 Claims**



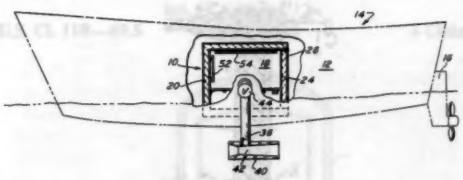
An anchorage for a boat dock, buoy, or the like, in which a suspended non-buoyant weight is cable-supported at a predetermined point between a fixed anchor on the floor of the harbor and the dock or buoy, for allowing the rise or fall of the dock, buoy or the like with the tide or to compensate for wave undulation, with the minimum degree of lateral movement and without disturbance to the imbedded anchor.

3,695,208

FOOD STORAGE APPARATUS FOR USE IN WATER-BORNE VESSELS

Jon Scott Fixler, Philadelphia, Pa., assignor to Industrial Patent Development Corp., Philadelphia, Pa.

Filed Nov. 16, 1970, Ser. No. 89,752
Int. Cl. B63j *2/12*
U.S. Cl. 114—211 **2 Claims**



An enclosed, thermally insulated air-tight chamber within the vessel, and vacuum creating apparatus, responsive to motion of the vessel, in fluid communication with the chamber.

3,695,209

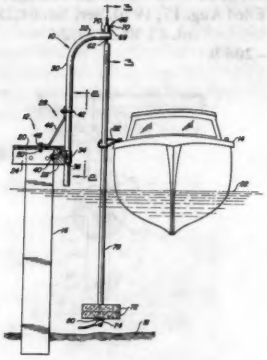
VESSEL MOORING DEVICES

Elroy J. Giese, Cleveland, Ohio, assignor to Tomlinson Industries, Inc.

Filed Aug. 21, 1970, Ser. No. 65,850
Int. Cl. B63b *21/04, 21/00*
U.S. Cl. 114—230 **10 Claims**

The specification and drawings disclose devices for mooring boats. The devices are arranged to permit vertical movement of the boats, such as caused by rise and fall of tides or rolling of the boats while maintaining the boats away from an associated dock, pier, seawall, float or the like and redistributing

or absorbing energy produced by the action of water, wind and other normally expected conditions. The devices disclosed all include a mounting assembly having a support arm adapted to extend outwardly above the normal maximum water levels. A mooring member extends vertically downward from the support arm to a predetermined position which, de-



pending upon the application, may be either below or somewhat above the normal minimum water level. The member is supported only at its upper end and is not otherwise guided or constrained. Four specific embodiments are disclosed. Two comprise weighted cables and two other comprise resilient plastic pipes or tubes.

3,695,210

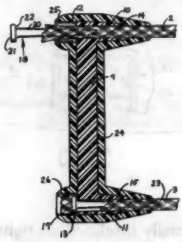
TOW HANDLE FOR WATER SKIING AND THE LIKE

William Harold Stein, 11136 Leadwell St., Sun Valley, Calif.

Filed June 9, 1970, Ser. No. 44,770

Int. Cl. B63b *21/56*

U.S. Cl. 115—6.1 **11 Claims**



A shock-absorbing water ski tow handle that floats and has a hard springy thermoplastic spine with a hole near each end. These holes receive hollow braided tow ropes held to the spine by knots or tapered wedge pins fitting inside the hollow ropes. Formed around the hard springy spine is a soft thermoplastic casing presenting an outer surface of the tow handle that is tacky and slip resistant regardless of whether the tow handle is wet or dry. A skier can grasp the tow handle between the tow ropes, and the encased spine is capable of substantially flexing and unflexing in this area without collapsing on the skier's hand, thereby absorbing shock that would normally be transferred from a towing vehicle to the skier.

3,695,211

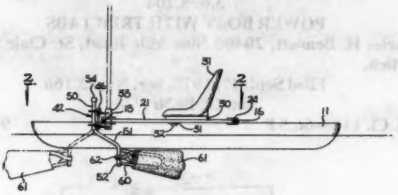
SELF-PROPELLED BOAT

William J. Gross, 20550 DeForest St., Woodland Hills, Calif.

Filed May 7, 1970, Ser. No. 35,321

Int. Cl. B63h *1/36*

U.S. Cl. 115—26 **6 Claims**



A self-propelled boat which utilizes a fin mounted on the lower end of an angularly moving, pivotally mounted shaft. The upper end of the shaft is connected with a cross piece which is engaged at its opposite ends by the feet of a boat occupant. The shaft is pivotally mounted at its upper end to flange plates attached to an upstanding post secured to the boat structure. The lower end of the shaft has a projection which can be inserted into a standard swim fin and the heel strap of the swim fin can wrap around the lower shaft end to retain the swim fin. The propelling mechanism can be applied to either a single-hull or twin-hull boat and can be positioned to propel the boat in either the fore or aft direction.

3,695,212

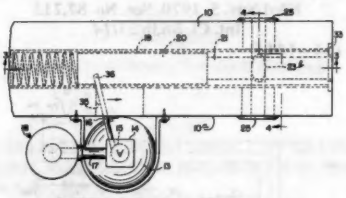
BURGLAR ALARM FIXED TO DOOR OR THE LIKE

Kenneth T. Gantt, 4224 E. 131st St., Cleveland, Ohio

Filed Oct. 22, 1970, Ser. No. 83,082

Int. Cl. E05b *45/00*

U.S. Cl. 116—8 **8 Claims**

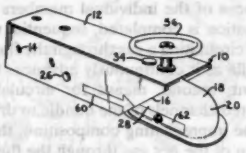


A burglar alarm is provided for use in connection with a door or other closure member for a building opening. A casing embedded in the door intermediate its inside and outside faces opens at that edge of the door which is presented to the frame when the door is closed. A plunger is slidably mounted in the casing and provided with a lock or keeper which either holds the plunger locked in an inoperative position approximately flush with the edge of the door and which, in unlocked position, is pushed outwardly by a spring in an abutting position against the door frame. If the door is opened by an unauthorized person while the plunger is in its unlocked condition, then the plunger is pushed outwardly by the spring and is operatively connected with an actuator which sounds an alarm. The plunger lock is preferably a Yale-type lock having two identical plugs which are turnable by a bitted key to turn the keeper between locked and unlocked positions. By this arrangement, the same key may be utilized to manipulate the keeper either from inside or outside the door.

3,695,213
TRAILER LOADING TESTER AND HITCH

John C. Littlefield, 11505 E. Bannister Road, Kansas City, Mo.

Filed Sept. 30, 1970, Ser. No. 76,753
Int. Cl. B60q
U.S. Cl. 116—28 10 Claims



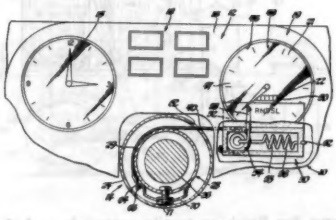
A connection for a tailer to indicate an improper load from the trailer tongue on the hitch of the towing vehicle comprising a pair of relatively movable members adapted for coupling with the trailer tongue and towing vehicle respectively. A spring is interposed between the members to resist relative movement therebetween resulting from the load. Indicia on the members visually indicate the relative positions of the members corresponding to the proper load. A manually operable clamp cooperates with an abutment on one member disposed to engaged by the other member for releasably securing the members together as a unit against the bias of the spring for normal towing operations.

3,695,214
Patent Not Issued For This Number

3,695,215
TRANSMISSION GEARSHIFT INDICATOR

Theodore Lambiris, Walled Lake, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 29, 1971, Ser. No. 193,804
Int. Cl. G09f *9/00*
U.S. Cl. 116—124 R 4 Claims

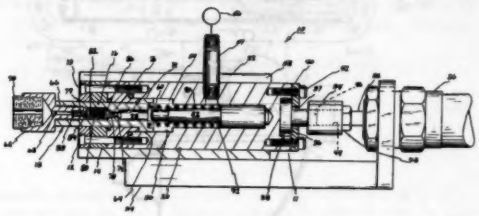


In a preferred form, this disclosure relates to an indicator mechanism for a transmission control system. The indicator mechanism comprises a housing means which has a dial associated therewith with spaced representations corresponding to different transmission settings, a pulley which is supported by the housing means for movement in opposite directions adjacent the dial, spring means which biases the pulley toward one end of the dial, a pointer which is adapted to move in opposite directions with the pulley to positions adjacent different ones of the representations to provide a visual indication of the transmission settings, and a cable which extends around the pulley and which acts in opposition to the spring means. The cable is adapted to be connected to a rotatable gearshifting member. The pulley rotates and moves in opposite directions adjacent the dial in response to movement of the gearshifting member to effect different transmission settings whereby the pointer is moved across the dial distances less than those traveled by the cable.

3,695,216
MARKING DEVICE

Paul S. Abrams, Huntington Woods, and Rudolph G. Peterson, Detroit, both of Mich., assignors to Carco Inc., Detroit, Mich.

Continuation-in-part of Ser. No. 817,371, April 18, 1969, Pat. No. 3,614,940. This application March 2, 1970, Ser. No. 15,731
Int. Cl. B05c *1/00*
U.S. Cl. 118—3 6 Claims

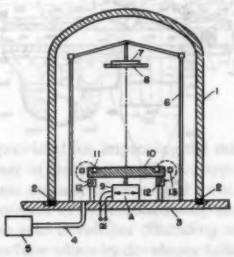


A marking device having a housing with a reservoir of a liquid marking agent therein and a reciprocally mounted feed tube having its inner end extending into the reservoir and its outer end terminating in a marking nib externally of the housing is adapted to engage an article to mark the same with the liquid marking agent. The feed tube is reciprocal between an extended position and a retracted position; the feed tube being reciprocated toward the retracted position to transfer the liquid marking agent from within the reservoir to the marking nib during movement of the housing toward the article subsequent to the initial engagement of the marking nib with the article.

3,695,217
VAPOR DEPOSITION APPARATUS

Jan Roland Jacobsson, Taby, Sweden, assignor to AGA Aktiebolag, Lidingo, Sweden

Filed June 11, 1970, Ser. No. 45,496
Claims priority, application Sweden, June 13, 1969, 8403/1969
Int. Cl. C23c *13/12*
U.S. Cl. 118—49.5 4 Claims



The vapor deposition apparatus includes a horizontally disposed, continuously rotating disc having a plurality of packets spaced about the periphery thereof, each containing a different evaporant source. Means directly heat only a portion of an annulus of said disc, including at least a portion of only one of said pockets. The disc has a thermal inertia such that sufficient heat is retained at all pockets, which have passed out of the immediate influence of said heat means, whereby to effect a simultaneous evaporation from all pockets.

3,695,218

APPARATUS FOR COATING TAPES, SHEETS AND THE LIKE WITH VISCOUS SOLUTIONS USING THE AIR-BRUSH PRINCIPLE

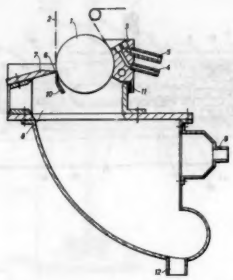
Peter Herzhoff, Leverkusen; Hans Gref, Cologne, and Stephan Platz, Leverkusen, all of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed June 5, 1970, Ser. No. 43,857

Claims priority, application Germany, July 12, 1969, P 19 35 488.2

Int. Cl. B05c *11/06*

U.S. Cl. 118—50 **3 Claims**



In a process for coating tapes or sheets with viscous solutions by the air-brush principle, a steam of air flows in the opposite direction to the movement of the web of material and acts substantially tangentially on the formation of the coating. This steam of air is produced by a vacuum between a bar which has an edge in the form of a ruler edge and the tape which is being coated, which moves past it at a close distance.

3,695,219

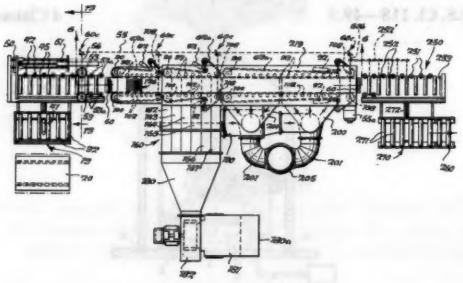
CORRUGATED BOARD IMPREGNATION APPARATUS

Charles Mourad Arian, Montreal, Quebec; Hans Hermann Mahler, Ville D'Anjou, Quebec, both of Canada; Claude Cecil Hayes, Jr., Suffield, Conn., and Hal W. Tanner, Jr., Georgetown, S.C., assignors to International Paper Company, New York, N.Y.

Filed July 13, 1970, Ser. No. 54,201

Int. Cl. B05c *7/02, 11/06*

U.S. Cl. 118—50 **16 Claims**



A bundle of corrugated boards, having the fluted channels of the boards in substantially unidirectional alignment throughout the bundle are continuously advanced through an apparatus which comprises means for supporting the bundle, means for applying a compressive force against the outer surfaces of the bundle to maintain surfaces of adjoining boards in the bundle in tight abutment as the bundle advances, with at least a portion of the compression means forming the walls of a trough in the zone of impregnation with the bottom of the trough being defined by the upper surface of the bundle; the trough walls tightly abut against at least the upper portions of the outer surfaces of the bundle. Means are provided for delivering a liquid impregnating composition into the trough as the bundle advances through the trough. The trough communicates with the aligned fluted channels of the bundle. Since the individual members of the bundle are tightly compressed together, the impregnating liquid flows downwardly through the fluted channels of the boards without contacting the outer surfaces of the individual members of the bundle. When impregnation is completed, sequential means are provided for: first, circulating a gas through the fluted channels of the board bundle as it continuously advances to flush out excess impregnant; second, means for circulating a hot gas through the fluted channels of the bundle to drive off volatiles contained in the impregnating composition; third, circulating a second stream of the hot gas through the fluted channels of the dried bundle as it continuously advances to effectuate curing of the impregnant contained in the boards; and fourthly, delivering water into the fluted channels of the bundle as it continuously advances in order to humidify the boards.

3,695,220

APPARATUS FOR FINISHING TEXTILE MATERIALS AND THE LIKE

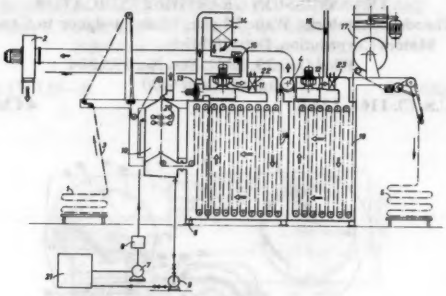
Felice Garzotto, Valdagno, Italy, assignor to Rimar S.p.A., Trissino (Vicenza), Italy

Filed March 9, 1970, Ser. No. 17,699

Claims priority, application Italy, March 30, 1969, 14310 A/69

Int. Cl. B05c *11/16*

U.S. Cl. 118—61 **12 Claims**



Apparatus for finishing textile materials and the like, in which the finishing compositions are applied onto the articles to be treated by the spraying method through one ore more rows of nozzles fed by a pump under a pressure of at least 3 kg/cm². The textile material is passed, driven by a plurality of rolls, firstly through the spraying chamber, then through a drying chamber with recycle of air, finally through a thermal treatment chamber with circulation of air.

3,695,221

COATING APPARATUS

Edwin K. Schaeuble, Green Bay, Wis., assignor to Paper Converting Machine Company, Inc., Green Bay, Wis.

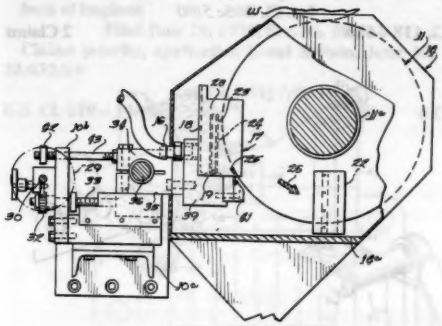
Filed May 24, 1971, Ser. No. 146,191

Int. Cl. B05c *1/08*

U.S. Cl. 118—203 **4 Claims**

Coating apparatus for the application of fluid media to a

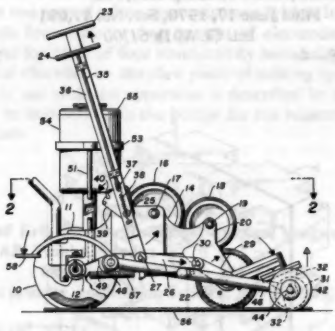
traveling web wherein a unique fountain arrangement is provided for a reverse angle doctor blade to minimize foaming.



3,695,222
PAINT STRIPER

Kearney D. Arrant, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Oct. 30, 1970, Ser. No. 85,636
Int. Cl. B05c *1/00*
U.S. Cl. 118—207 **4 Claims**



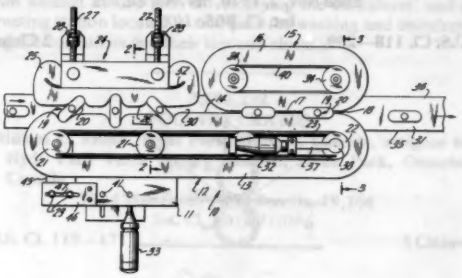
A paint striper is provided with an adjustable cable guide means which constrains movement of the striper along one or more cables laid adjacent to a predetermined path on a surface. The striper moving on the cables then applies a continuous straight stripe on the surface along the predetermined path.

3,695,223
ALL PURPOSE BELT COATER

Milo A. Dunham, Elmira, and Donald F. Hardy, Horseheads, both of N.Y., assignors to Dart Industries, Inc., Los Angeles, Calif.

Filed July 28, 1970, Ser. No. 62,218
Int. Cl. B05c *1/14*
U.S. Cl. 118—217 **12 Claims**

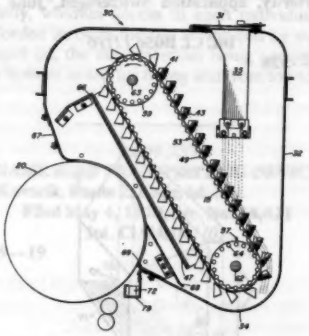
An apparatus for coating an article having a cross section of any shape. The apparatus includes two coating portions. In one of the portions, the article is rotated against a backplate by a coating belt and in the other portion, the article is coated by two belts having surfaces which conform to the shape of the article.



3,695,224
CASCADE DEVELOPMENT

Stephen F. Royka, 265 Howell Road, Fairport, N.Y.

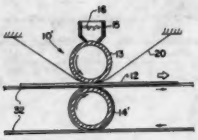
Division of Ser. No. 866,320, Oct. 14, 1969, Pat. No. 3,663,291. This application Nov. 26, 1971, Ser. No. 202,181
Int. Cl. G03g *13/00*
U.S. Cl. 118—637 **3 Claims**



Processes are provided for improving the mixing efficiency of carrier and toner in electrostatographic apparatus by causing a partial reverse cascade of developer from the buckets of a bucket-type conveyor in the electrostatographic developing apparatus prior to said developer cascading across the electrostatographic surface whereby developer falls back upon subadjacent buckets and mixes with toner newly deposited therein.

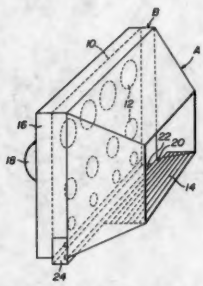
An improvement in electrostatographic development apparatus is obtained by providing the buckets of the bucket-type conveyor of the development apparatus with a plurality of apertures in the posterior wall of each bucket thereby obtaining buckets adapted to allow a partial egress of developer from said apertures prior to said developer cascading across the electrostatographic surface whereby developer falls back upon subadjacent buckets and mixes with fresh toner released from the toner dispenser.

3,695,225
GLUE SPREADER
Wayne Pape, Gold Beach, and Doyle J. Hall, Eugene, both of Oreg., assignors to U.S. Plywood-Champion Papers Inc., New York, N.Y.
Filed Nov. 2, 1970, Ser. No. 86,101
Int. Cl. B05c 1/00
U.S. Cl. 118—239 2 Claims



A roll glue spreader for applying an adhesive coating to one side of veneer strip or sheets wherein a set of transversely-spaced endless chain conveyors, extending fore and aft of a pair of spreader rolls and fitting inside mating grooves formed on the circumference of the bottom spreader roll, carry the veneer through the spreader while maintaining a positive drive on the veneer at all times and preventing any tendency of the veneer to wrap-up on the bottom spreader roll.

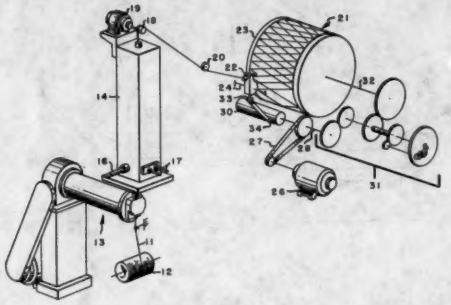
3,695,226
SPRAYING BOOTH
Maurice Paul Wanner, Geneva, Switzerland, and Neil Rudolph Wallis, Goring on Thames, England, assignors to Aerocoat S.A., Geneva, Switzerland
Filed May 26, 1970, Ser. No. 40,593
Claims priority, application Switzerland, June 25, 1969, 9701/69
Int. Cl. B05c 11/16
U.S. Cl. 118—326 6 Claims



A spraying booth for facilitating the recovery of the surplus of pulverulent material used to coat an object with an electrostatic gun, which includes at the rear means for enabling the booth to communicate with an air extraction installation, which is open at the front to give access to the gun, and which has a vertical cross-section that increases from the front rearwards.

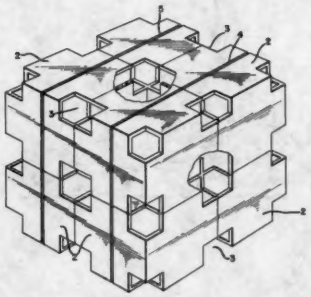
3,695,227
Patent Not Issued For This Number

3,695,228
VULCANIZING RUBBER COVERED WIRE
Herbert R. King, Spartanburg, S.C., assignor to Deering Milliken Research Corporation, Spartanburg, S.C.
Filed June 15, 1970, Ser. No. 46,416
Int. Cl. B05c 5/00
U.S. Cl. 118—620 2 Claims



Apparatus including a supply source of metal wire cord, an extruder for applying a coating to the cord, a pressure chamber including a high frequency induction heating source, an adjustable seal assembly for the outlet of the chamber, means for withdrawing coated cord from the pressure chamber through the seal assembly, and means for collecting the coated cord in a desired configuration.

3,695,229
CELL ASSEMBLY
Charles E. Renn, Route 2, Hampstead, Md.
Filed June 17, 1970, Ser. No. 47,091
Int. Cl. A01k 61/00
U.S. Cl. 119—4 7 Claims



A unitary cell assembly comprises a plurality of regular, six sided, rectilinear and contiguous hollow cells, each cell having an opening at each vertex thereof, the openings of adjacent cells being adjacent thus providing intercommunication between adjacent cells for the passage of a fluid therebetween. In a preferred form, the cells are cubic. The cell walls are preferably disposed at an angle with respect to the horizontal and verticle for several uses. For example, for use as an oyster cultch, each cell wall is preferably disposed at an angle of about 45° with respect to the horizontal and vertical. Other uses for the cell assembly include gas-liquid contact, liquid-liquid contact, gas-solids contact, liquid-solids contact, removal of solids from liquids and gases, flocculation of suspended solids, water clarification, biological trickle filtration, energy absorbing such as sound absorbency.

3,695,230

APPARATUS FOR THE DETECTION OF MASTITIS IN MILK ANIMALS

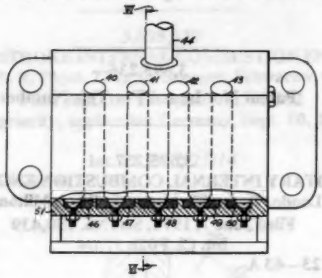
Joshua Creer Quayle, 14 Raby Road, Stockton, Teesside, and Graham Roland Greatrix, 12 Gillpark Grove, Seaton Carew, both of England

Filed June 29, 1970, Ser. No. 50,711

Claims priority, application Great Britain, June 30, 1969, 33,032/69

Int. Cl. A01j *7/00*

U.S. Cl. 119—14.14 8 Claims



Apparatus for comparing the conductivities of liquid streams is described. Such apparatus has a particular application in detecting mastitis in milk animals where differences in the conductivities of milk streams from different teats of the same animal may indicate the presence of mastitis. The apparatus described is specially suited for use with milking machinery in that it is economical to manufacture and is easy to keep clean. In one form the apparatus has four U shaped channels one for each stream of milk from a cow. The channels include electrodes so connected that each milk stream can form one arm of a four arm resistance bridge. In other embodiments four coils or four groups of electrodes are provided, one for each of four conductivity measuring cells in a cylindrical chamber on the claw piece of milking apparatus. A switch for use with the apparatus is described to allow a resistor to be substituted in the bridge for the resistance of any milk stream.

3,695,231

MILKING SYSTEM

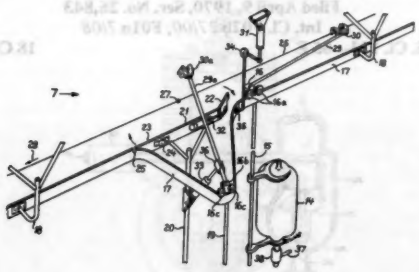
Sven Olof Erik Strom, Huddinge, Sweden, assignor to Alfa-Laval AB, Tumba, Sweden

Filed July 2, 1970, Ser. No. 51,830

Claims priority, application Sweden, July 7, 1969, 9609/69

Int. Cl. A01j *09/08*

U.S. Cl. 119—14.11 2 Claims



A conveying path for milk containers with their respective teat cup clusters extends in a closed circuit and along a row of cow stalls. Switches for the respective stalls are located in said path, each switch being operable in a first position to convey from the path to the corresponding stall a milk container with its cluster and to return the container and cluster to the path after completion of milking, each switch being operable in a second position to prevent a container and cluster from entering the corresponding stall when it is occupied by another container and cluster. The system also includes an emptying station located in said path for emptying the containers, and a treating station located in said path for washing and disinfecting the containers and their teat cup clusters.

3,695,232

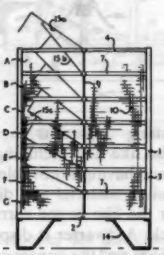
POULTRY CRATES

William C. Frank, Hyde Park, Ontario, Canada, assignor to Hyde Park Farm Supply Limited, Hyde Park, Ontario, Canada

Filed March 13, 1970, Ser. No. 19,166

Int. Cl. A01k *31/06*

U.S. Cl. 119—17 3 Claims



A unit consisting of one or more stacks of poultry cages for facilitating large volume in-and-out movements of poultry, suitable for loading on and unloading from a truck trailer by a power lift carried by the vehicle and for travel to and from the vehicle and along the aisles of a poultry house on a separable wheeled dolly, wherein access to each individual cage in a stack is afforded through the top at one end by way of an upwardly hinged lid, the cage interiors being accessible successively from bottom to top for filling and from top to bottom for emptying.

3,695,233

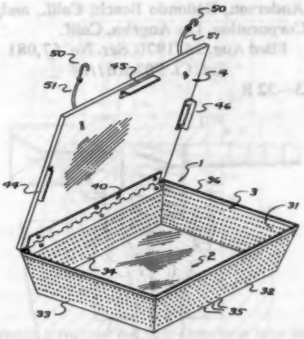
GAME BIRD TRANSPORTING DEVICE

Vincent J. Kovarik, Route 2, Imperial, Mo.

Filed May 4, 1970, Ser. No. 34,421

Int. Cl. A01k *1/02*

U.S. Cl. 119—19 6 Claims



Game birds, especially pheasants, are transported in stacked containers, each with a substantially imperforate bottom, a rigid, load-supporting perforate side wall convergently

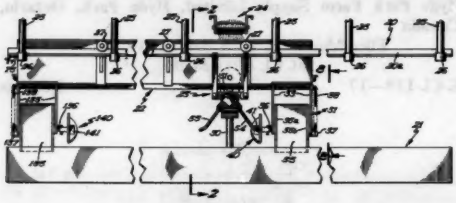
slanted toward the bottom and connected to it, and a load-supporting opaque top, hingedly connected to the side wall.

3,695,234

MATERIAL HANDLING APPARATUS WITH DIVERTER MEANS

Floyd E. Buschbom, Long Lake, and Roger L. Johnson, Wayzata, both of Minn., assignors to Veda, Inc., Long Lake, Minn.

Filed Oct. 2, 1970, Ser. No. 77,668
Int. Cl. A01k *05/00*
U.S. Cl. 119—52 B **17 Claims**



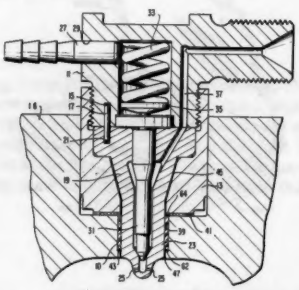
A material handling apparatus especially for handling livestock feed or the like and including a carriage movable along a fixed track and having a movable conveyor on the carriage so that it receives material and distributes it along the length of a bunk or the like as the carriage moves back and forth along the track. A diverter is disposed so that material handled by the carriage and the conveyor thereon is deposited first onto the diverter and is guided thereby either to one or the other of two longitudinal sections in the feed bunk or the like, depending upon the angle or position of the diverter. In an example disclosed, material is deposited from either one end or the other of the carriage and a diverter is located at each end thereof. A remotely controlled apparatus is provided for switching the diverter from one position to the other so that the feed or other material may be deposited selectively in one or the other of the longitudinal sections of the bunk. The switching apparatus includes cam means including a stationary means and a means movable with each of the diverters. The stationary means includes a means movable between first and second operating positions cooperable with the means movable with the diverters to move the diverters to one or the other of their positions and to maintain them in such position until the means associated with the stationary means is moved to its other operating position.

3,695,235

HEAT SEAL FOR FUEL INJECTION NOZZLES

Harold E. Anderson, Redondo Beach, Calif., assignor to McCulloch Corporation, Los Angeles, Calif.

Filed Aug. 26, 1970, Ser. No. 67,081
Int. Cl. F02m *61/14*
U.S. Cl. 123—32 R **7 Claims**



An elongated bushing consisting of a polymer such as tetrafluoroethylene may be formed in the configuration of a sleeve. The bushing may be fit over an injection nozzle mounted within a bore formed within the cylinder head of an internal combustion engine. The bushing may be axially compressed between an internal shoulder formed within the bore of the cylinder head and a built-up portion on the nozzle assembly. The axial compression acting on the bushing causes the bushing to have radial expansion so as to completely fill the annular space formed between the nozzle and the internal wall of the bore defining a cavity within the cylinder head. An annular disk-like monel member may be fit over the nozzle and supported adjacent the hot axial end of the bushing to insulate the surface thereof against the effect of hot cylinder gases.

3,695,236

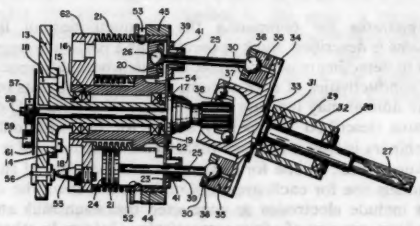
Patent Not Issued For This Number

3,695,237

ROTARY INTERNAL COMBUSTION ENGINE

Erwin N. Londo, Tenneriffe Mountain Road, Milton, N.H.

Filed June 7, 1971, Ser. No. 150,439
Int. Cl. F02b *57/04*
U.S. Cl. 123—43 A **6 Claims**



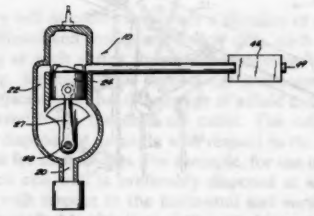
The characteristic feature of the present engine is a circular array of cylinders arranged to rotate about a fixed support. Each of the piston rods is connected by a ball and socket connection to a rotatable plate set at such an angle that the stroke of the piston equals the base of a right triangle defined by the rotatable plate and the base of the cylinders. A power shaft projects from the plate. Alignment is maintained through a constant velocity universal joint. Substantially vibrationless operation is achieved.

3,695,238

INTERNAL COMBUSTION ENGINE EXHAUST GAS DISCHARGE SYSTEM

Michael J. Boerma, Waukegan, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed April 9, 1970, Ser. No. 26,843
Int. Cl. F02b *27/00*; F01n *7/08*
U.S. Cl. 123—65 E **18 Claims**



Disclosed herein is an exhaust receiver for a two-cycle internal combustion engine. The exhaust receiver is generally in the form of a hollow U-shaped tube with each leg of the tube

communicating with one of the exhaust ports of a two cylinder engine. Rarefaction waves are reflected to the exhaust ports from an expansion chamber at the web or bight of the U-tube during engine scavenging to reduce the pressures at the exhaust ports and facilitate removal of the exhaust gases. Compressive waves originating from one cylinder are reflected by the piston skirt of the other cylinder when the piston is the closing port. The reflected compression waves return to the originating cylinder just prior to the closing of the port of the originating cylinder during the compression stroke to increase the compression of the fuel-air mixtures.

3,695,239

TWO-STROKE INTERNAL COMBUSTION ENGINE

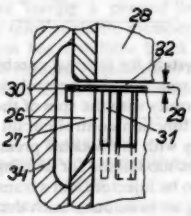
Hermann E. R. Papst, 7742 St. Georgen, Schwarzw, Germany

Filed Sept. 10, 1970, Ser. No. 70,992

Claims priority, application Germany, Sept. 10, 1969, P 19 45 720.6

Int. Cl. F02b *25/14*

U.S. Cl. 125—65 PD **42 Claims**



A two-stroke internal combustion engine in which the gas exchange is controlled by means of inlet and exhaust ports or valves in conjunction with one or two flat pistons, whereby the flank portions adjoining the upper edge of the parts are so constructed that the inlet ports form together with the peripheral surface of the piston or with an insert, a nozzle that directs from the beginning of the opening the inflowing fresh gas jets over the piston head in a substantially flat manner.

3,695,240

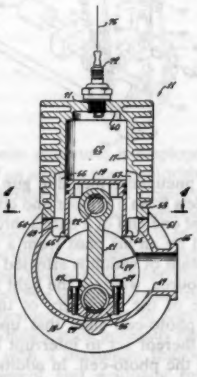
REVERSIBLE ENGINE MOUNT

Cecil T. Cookson, 918 Cornell Drive, Burbank, Calif.

Filed Aug. 31, 1970, Ser. No. 68,349

Int. Cl. F02b *33/04*

U.S. Cl. 123—73 A **4 Claims**



A two-cycle gasoline engine having a cylinder block mountable in several alternative positions about its axis so as to allow variable orientations of its exhaust.

3,695,241

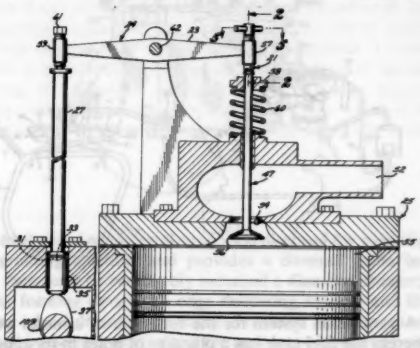
VALVE SHOCK DAMPENER

Rex W. Peterson, 11591 Davenport Road, Los Alamitos, Calif.

Filed June 8, 1970, Ser. No. 44,211

Int. Cl. F01l *1/18, 1/20, 1/24*

U.S. Cl. 123—90.45 **7 Claims**



A valve chock dampener for installation at one end of a rocker arm in a linkage for controlling opening and closing of a valve in an internal combustion engine. The dampener includes a housing formed with an open ended piston-receiving chamber and a piston is slidably received in such chamber and is formed with a head end for engaging an adjacent control member for controlling the valve.

3,695,242

ELECTRONIC GOVERNOR FOR FUEL-INJECTION TYPE INTERNAL COMBUSTION ENGINES

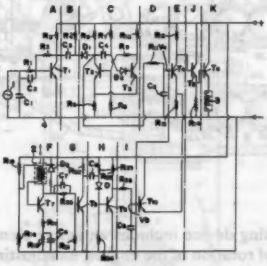
Yoshiharu Tada, and Minoru Sawada, both of Higashi-Matsuyama, Japan, assignors to Diesel Kiki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 5, 1970, Ser. No. 61,087

Claims priority, application Japan, Sept. 4, 1969, 44/83640

Int. Cl. F02m *51/00*

U.S. Cl. 123—102 **1 Claim**



An electronic governor for fuel-injection type internal combustion engines in which an output voltage inversely proportional to a rotation speed of engine and an output voltage of a blocking oscillator correlated to a position of an accelerator lever of the engine are applied to a differential amplifying circuit whose output is connected to an electromagnetic fuel control mechanism actuating a fuel regulating rod.

3,695,243

FUEL TANK VENTILATION IN MOTOR VEHICLES

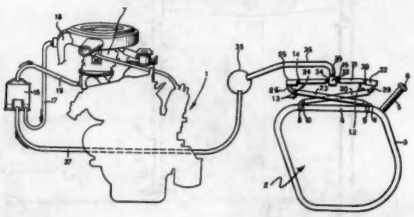
Giovanni Torazza, Turin, Italy, assignor to Fiat Societa per Azioni, Turin, Italy

Filed Nov. 12, 1970, Ser. No. 88,733

Claims priority, application Italy, Nov. 14, 1969, 54033 A/69

Int. Cl. B65d *25/00*; F02m *21/00*

U.S. Cl. 123—136 3 Claims



A ventilation system for the fuel tank of a motor vehicle, wherein the fuel tank has a plurality of holes in its upper surface. Each hole is connected to a manifold by a two-part tube, each tube having a container of enlarged diameter between its first and second parts. The two parts of the tube are inclined relative to each other, with the first part being inclined upwards from one side of the tank to the other. The manifold is, in turn, connected to a fuel vapor trap.

3,695,244

FUEL REGULATING DEVICES FOR INTERNAL COMBUSTION ENGINES

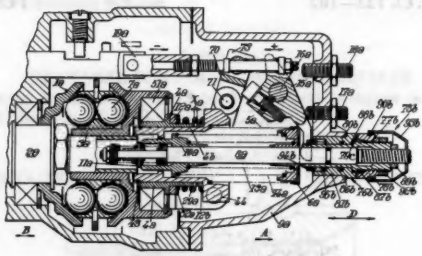
Andre Vauille, Lyon, France, assignor to Societe Industrielle Generale de Mecanique Applique S.I.G.M.A., Paris, France

Filed March 26, 1970, Ser. No. 22,784

Claims priority, application France, March 25, 1969, 6908796

Int. Cl. F02d *1/04*, *1/06*

U.S. Cl. 123—140 VS 12 Claims



The regulating device includes an active element, sensitive to the speed of rotation of the engine, an adjusting element for the flow of fuel per revolution connected to the active element, a sleeve connected flexibly to the active element and a linking mechanism attached on the active element, the sleeve and the adjusting element. Means for the setting of several values of the flow include a member provided with two inclined ramps and stop means provided with two ramps complementary to the preceding ramps. The regulating device may be of "any speed" or of the "mini-maxi" type. It can include control means which can be servocoupled to a parameter such as the density of the fuel used by the engine.

3,695,245

FUEL SUPPLY SYSTEM FOR INTERNAL COMBUSTION ENGINES

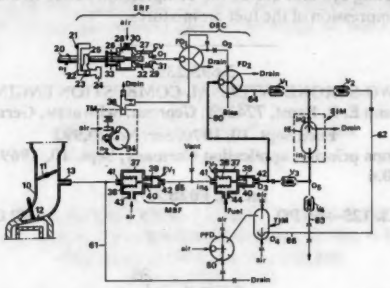
Takashi Ishida, Ohi-machi, Japan, assignor to Mikuni Kogyo Co., Ltd., Tokyo, Japan

Filed Nov. 23, 1970, Ser. No. 91,618

Claims priority, application Japan, Nov. 22, 1969, 44/93814

Int. Cl. F02d *1/04*; F02b *33/00*

U.S. Cl. 123—140 MC 5 Claims



A fuel supply system for internal combustion engines comprising an engine rpm function control circuit for controlling fuel flow in conformity with the rpm of the engine, a manifold boosted pressure function control circuit for controlling fuel flow in conformity with the boosted pressure in the manifold, a summing impact modulator for causing fuel controlled by said two circuits to be injected, and a transverse impact modulator for supplying air in amounts such that proper proportions of air and fuel can be obtained in conformity with the boosted pressure.

3,695,246

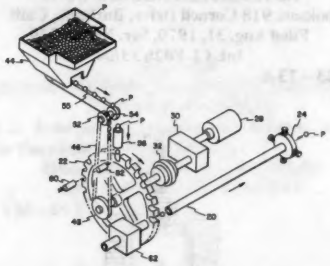
PNEUMATIC MACHINE GUN WITH PHOTO CELL INTERRUPTED CIRCUIT

Ernest A. Filippi; Jack B. Watson, and Larry E. Hughes, all of Newhall, Calif., assignors to The United States of America as represented by the Secretary of the Navy

Filed June 10, 1971, Ser. No. 151,681

Int. Cl. F41f *1/02*

U.S. Cl. 124—11 4 Claims



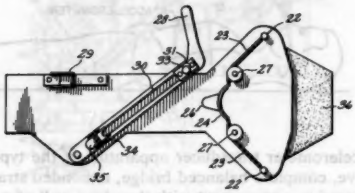
A pellet firing pneumatic machine gun wherein a toothed wheel carries pellets from a hopper and conveyer assembly to a position adjacent one end of a barrel through which the pellets are propelled by an air blast from a solenoid valve, the periodic energization of which is effected by a photo-cell exposed to a light source, wherein the light source is placed on the opposite side of the periphery of the pellet delivering wheel from the photo-cell such that upon rotation of the wheel, the teeth thereof act to interrupt light from the light source falling on the photo-cell. In addition, a pellet slitting device mounted on the other end of the barrel, wherein the device includes adjustable blades which score the skin of dye containing pellets shot from a gun to render the pellets more frangible upon impact.

3,695,247

ELASTIC BAND TYPE PROJECTING DEVICE

Henry G. Tucker, Norwalk, and Paul J. Donoski, Bridgeport, both of Conn., assignors to Remington Arms Company, Inc., Bridgeport, Conn.

Filed Oct. 29, 1970, Ser. No. 85,022
Int. Cl. F41b *7/00*
U.S. Cl. 124—17 3 Claims



A target launcher having a pivoted lever arm that is manually pivoted to tension elastic members for projecting a target. The lever arm has a slidable block with a vertically movable fin which is manually actuated to release the elastic members when the lever arm is in a cocked position.

3,695,248

VIBRATION DAMPENING CORE FOR AN ARCHERY BOW

Tadao Izuta, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Japan

Filed July 24, 1970, Ser. No. 57,998
Int. Cl. F41b *5/00*
U.S. Cl. 124—30 R 4 Claims

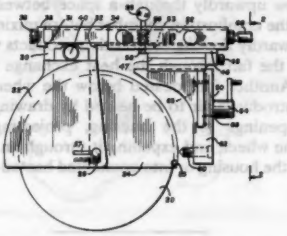
A core of composite structures is employed as a vibration absorbing section of an archery bow comprising ordinarily two relatively hard but flexible elongated members made of for instance, maple wood, beech wood, bamboo, or a resilient synthetic resin reinforced with glassfibers and a resilient sheet member made of, for instance, rubber or a synthetic resin such as ABS resin interposed between said two elongated members in a manner to extend in a lengthwise direction thereof, all of said members are bonded together to form one composite structure having a configuration generally flat and of rhombic or triangular form with a maximum thickness at an intermediate portion thereof and gradually reduced thickness toward both ends thereof. The composite structures are positioned between the handle and a bow limb so as to absorb vibrations developed in a bow limb.

3,695,249

GRINDING WHEEL DRESSING APPARATUS

Henry F. Swenson, 22 Holmehill Lane, Roseland, N.J.

Filed Aug. 12, 1970, Ser. No. 63,060
Int. Cl. B24h *53/14*
U.S. Cl. 125—11 CD 14 Claims



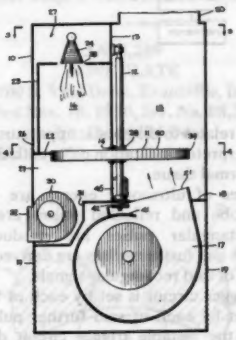
A wheel guard or pedestal support is disposed for mounting on a grinding machine and provides a dovetail guide into which there may be removably mounted a diamond dresser; a contour forming device; an edge deburring support and like grinding wheel dressing apparatus. Precision lead screws are mounted in member portions of the support, said screws being disposed to be rotated to move a mounted dressing device into a desired precise position. A plunger pin is carried by a member and cooperates with an aperture in a mating member to permit a dressing device to be removed during grinding operations and to be reinstalled at the precise prior dressing position. In one embodiment a contour dressing mechanism is provided in which a diamond-surfaced precisely contoured wheel is rotated in the same direction as the grinding wheel is rotated but at a speed differential of about 400 surface feet per minute. This operation of the contour dressing mechanism provides a dressing of the grinding wheel whereby the wheels and dresser are kept at a relatively cool condition and the diamond wear is at a very low rate.

3,695,250

ROTARY REGENERATIVE SPACE HEATER

Marvin K. Rohrs, Fanwood; Robert J. Neary, Westfield, both of N.J.; Robert B. Rosenberg, Evergreen Park, Ill.; Alan Kardas, Chicago, Ill., and William R. Staats, Naperville, Ill., assignors to Arco-Flow Dynamics, Inc. (The Wing Company Division), Linden, N.J.

Filed Dec. 3, 1970, Ser. No. 94,911
Int. Cl. F24h *3/06*
U.S. Cl. 126—110 R 17 Claims



A rotary regenerative type gas-fired space heater in which a line-type raw gas burner is mounted atop and fires downwardly within a combustion chamber, the bottom of which is in direct communication with one side of a low ther-

mal mass regenerative heat exchange wheel. The burner, chamber and wheel are mounted within a housing partitioned to provide two vertically disposed, parallel air passages, the burner and chamber being in one passage and the horizontally disposed wheel extending into both and passing through the partition. High velocity air for both combustion and dilution is induced by an exhaust fan to enter openings in the housing and to flow upwardly through a space between the housing walls and the combustion chamber before mixing with the fuel and downwardly flowing combustion products which are then drawn by the fan through the heat exchange wheel and exhausted. Another fan located below the wheel in the other passage introduces air to be heated by drawing it in through bottom openings in the housing, projecting it upwardly through the wheel, and expelling it through an outlet grille at the top of the housing or into connected heated-air ducting.

3,695,251

Patent Not Issued For This Number

3,695,252

ULTRASONIC DIAGNOSTIC APPARATUS

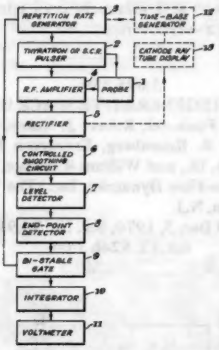
George Andrew Douglas Gordon, Friston House, 25 Church Road, Richmond, England

Filed Aug. 31, 1907, Ser. No. 68,209

Claims priority, application Great Britain, Sept. 26, 1969, 47,387/69

Int. Cl. A61b *10/00*

U.S. Cl. 128—2 V **5 Claims**



The invention relates to diagnostic apparatus capable of giving an easily-interpreted indication differentiating normal lung tissue from abnormal tissue.

Periodic pulses of ultrasonic energy are transmitted by means of a probe and reflected pulses are rectified and smoothed. Rectangular pulses are produced from the smoothed signals and further pulses are derived from the trailing edge of each of said rectangular signals.

A bistable trigger circuit is set by each of the transmitted pulses and unset by each of said further pulses so that the on/off ratio of the bistable trigger circuit depends on the length of time for which the reflected signals remain above a predetermined level.

Additional reflections received after the first fall below said predetermined level are ignored. The bistable circuit controls a current-measuring device through an integrator.

3,695,253

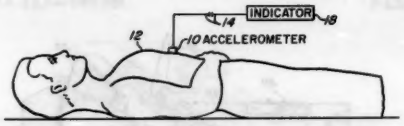
APPARATUS FOR PHYSIOLOGICAL INVESTIGATION

Harold G. Vielhauer, 1359 Fudge Drive, Xenia, Ohio

Continuation of Ser. No. 586,117, Oct. 12, 1966, abandoned. This application June 29, 1970, Ser. No. 50,542

Int. Cl. A61b *5/02*

U.S. Cl. 128—2.05 P **5 Claims**



Accelerometer transducer apparatus, of the type which is resistive, complete balanced bridge, unbonded strain gage, is positioned in engagement with the chest wall of a subject in the region of the heart. The accelerometer transducer has a primary response in a direction substantially normal to the chest of the subject. Sensing mechanism which senses frequencies in the range of between two and thirty cycles per second is connected to the accelerometer transducer, the signal output thus being a function of the precordial vibrations associated with the chest wall of the subject.

3,695,254

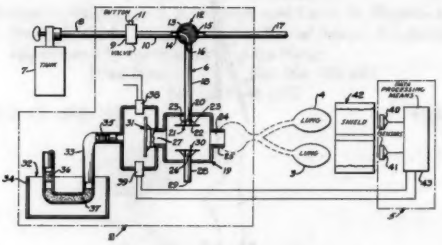
METHOD AND APPARATUS FOR DETERMINING VOLUME OF A LUNG

Alvin S. Blum, Coral Gables, Fla., assignor to Ohio Nuclear, Inc., Mentor, Ohio

Continuation of Ser. No. 710,818, March 6, 1968, abandoned. This application June 7, 1971, Ser. No. 150,785

Int. Cl. A61b *5/08*

U.S. Cl. 128—2.08 **15 Claims**



A method and apparatus for dispensing a known and unknown volume of gas into the lungs of a vertebrate, for processing pulsatile input data from a sensing system for direct digital calibration and readout of the measurement, and for externally determining the volume and gas flow rate of each lung in a vertebrate.

3,695,255

FOOT EXERCISING DEVICE

Edward J. Rodgers, 5705 Tannahill Circle, and Rolland G. Sturm, 132 Forbes Drive, both of Huntsville, Ala.

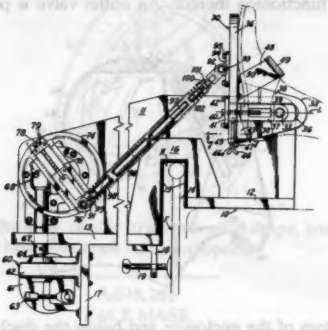
Filed May 14, 1970, Ser. No. 37,223

Int. Cl. A61h *1/02*

U.S. Cl. 128—25 B **8 Claims**

A foot exercising device for use on persons confined to bed and including an exercising device having a pair of foot supporting means pivotally supported and attachable to a bed in a position to receive the feet of a person lying in bed. Oscillating control means is operatively connected to each of the foot support means for effecting an oscillating movement of the

foot support means and the foot supported thereon of a limited moment of force about the foot ankle joint to exercise



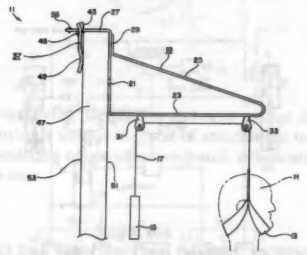
the body muscles associated with the oscillating foot movement.

3,695,256

OVER-A-DOOR SUPPORT FOR CERVICAL TRACTION APPARATUS

James P. Brower, Memphis, Tenn., assignor to Richards Manufacturing Company, Memphis, Tenn.

Filed Nov. 16, 1970, Ser. No. 89,839
Int. Cl. A61h 1/02
U.S. Cl. 128—75 6 Claims



A device intended to be removably attached to the top of a door for supporting cervical traction apparatus. The device is particularly directed toward applying cervical traction at home or in a doctor's office or where more elaborate traction support structure commonly found in a hospital, or the like, is unavailable. The device includes adjustable structure that adapts it to a variety of different doors having various thicknesses, i.e., it fits all common doors without the use of normal attaching devices and/or tools, e.g., screws, threaded clamps, screwdrivers, etc. A significant feature of the device is that it may be repeatedly attached to a door without marring or defacing the surface thereof so that when not in active use, it may simply be lifted off the top of the door and stored in any out of the way convenient location.

3,695,257

FACE LIFTING DEVICE

Edith A. Hale, 310 E. 44th St., New York, N.Y.

Filed Nov. 16, 1970, Ser. No. 89,604
Int. Cl. A61f 5/08
U.S. Cl. 128—76 B 3 Claims

The disclosure relates to a face lifting device attachable to pin curls at both temple areas of the wearer's head. The device consists primarily of especially formed ear clasp connected by extensible bands to the pin curls and of combs similarly connected. The former are used to erase lines and wrinkles at the cheek and mouth areas and minimize flabbiness under the ear area and particularly the neck and underneath the chin. The latter depending on their placement inside the hair line are employed to remove facial wrinkles and if desired may be ad-

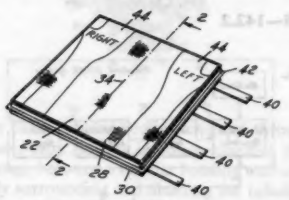
justed to raise the outer corners of the eyes affording the so-called almond eye effect. The device is also useful for lifting the face that has been paralyzed as the result of a stroke or the like.

3,695,258

DISPOSABLE SPLINT

Maurice E. Castle, 20211 Greenfield, Southfield, Mich.

Filed July 27, 1970, Ser. No. 58,408
Int. Cl. A61f 5/04
U.S. Cl. 128—87 R 13 Claims



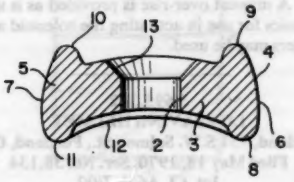
A disposable external splint adapted to be wrapped around a body member, such as an arm or leg, to protect and immobolize the body member. The splint includes a consumable support pad which is relatively rigid about one axis, to support and immobolize the body member, and is flexible about an axis perpendicular to the rigid axis, such that the pad may be wrapped around the body member and secured. The pad is received in a disposable envelope, which preferably includes an absorbent layer adapt to contact the body member.

3,695,259

BONE PLATE

Clyde E. Yost, 700 S. Villa Drive, Evansville, Ind.

Filed Nov. 10, 1970, Ser. No. 88,337
Int. Cl. A61f 5/04
U.S. Cl. 128—92 D 6 Claims



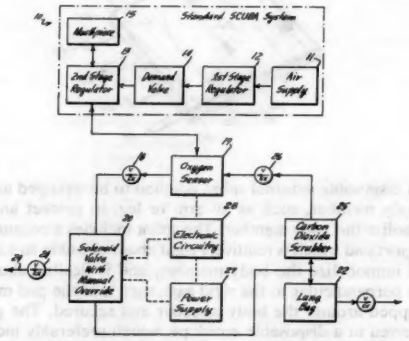
The invention relates to a plate adapted to be secured to a bone surface in order to set broken bones, the plate having a

modified I configuration in cross section for maximum strength characteristics and to enable the plate to be fitted against bones of varying surface contours, while the plate is of minimum thickness. The plate is provided with a plurality of countersunk apertures or slots to enable the plate to be secured to the bone by means of screws.

3,695,260
LAPAROTOMY SHEET
Dan D. Endres, Memphis, Tenn., assignor to Kimberly-Clark Corporation, Neenah, Wis.
Filed March 30, 1970, Ser. No. 23,570
Int. Cl. A61f *13/00*
U.S. Cl. 128—132 D **5 Claims**

A disposable laparotomy sheet comprises a major sheet of porous nonwoven fabric and a minor sheet of opaque, glare-resistant plastic near the center of the major sheet and including a fenestration to define the operative area.

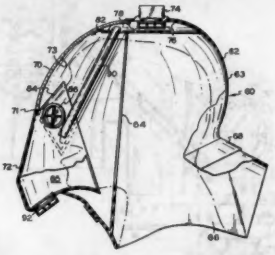
3,695,261
SEMI-CLOSED REBREATHING APPARATUS
Donald R. Emmons, 11222 Astronaut Boulevard, c/o Central Florida Industrial Park, Orlando, Fla.
Filed Oct. 12, 1970, Ser. No. 79,775
Int. Cl. A62b *7/04*
U.S. Cl. 128—142.2 **9 Claims**



A rebreathing apparatus adapted for connection to an open circuit demand type scuba device in which a rebreather system is used with compressed air supply tanks and demand regulators The rebreathing system has a lung bag for breathing into and out of connected in series with a CO_2 scrubber for removing CO_2 and an oxygen sensor for sensing the level of oxygen in the air of the rebreather. When the oxygen reaches a predetermined level, a solenoid actuates one or more exhaust valves for exhausting gas in the rebreather system allowing the demand regulator to draw additional air from the air supply tank. A manual over-rise is provided as is special solid state electronics for use in actuating the solenoid and warning lights or meters may be used.

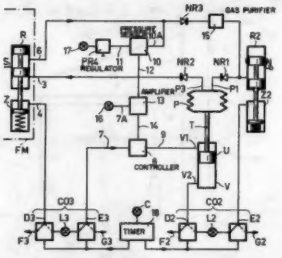
3,695,262
LIFESAVING HELMET
John F. Haviland, 731 S.W. Salmon St., Portland, Oreg.
Filed May 18, 1970, Ser. No. 38,134
Int. Cl. A62b *7/00*
U.S. Cl. 128—145 R **2 Claims**

A lifesaving helmet has an inlet valve positioned above an enclosure for the head and a conduit communicating at one end with the inlet valve, the other end of the conduit being so located as to discharge air in the region of the nose and mouth of the wearer, but terminating short of the mouth to enable normal functioning thereof. An outlet valve is positioned at



the bottom of the enclosure and below the discharge end of the conduit. The outlet valve is adapted to exhaust both air and water from within the enclosure under normal exhalation pressure.

3,695,263
CLOSED CIRCUIT MEDICAL RESPIRATORS
Barry John Kipling, Cambridge, England, assignor to Pye Limited, Cambridge, England
Filed Jan. 29, 1970, Ser. No. 6,845
Claims priority, application Great Britain, Jan. 30, 1969, 5,110/69
Int. Cl. A61m *16/00*
U.S. Cl. 128—145.6 **13 Claims**

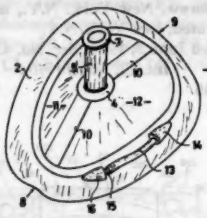


A closed circuit medical respirator provided with a face mask for applying patient gas to a patient and for transmitting exhaled gas to the respirator. A closed path extends from the face mask to a gas purifier, a bellows and back to the face mask. Appropriate drive means are connected with the bellows for causing flow of gas to and from the patient so as to create a positive pressure in the path during one part of the respiratory cycle and a negative pressure during the other part. A gas flow sensor is provided in the path and is connected to a controller for operating the drive means of the bellows. Changeover switches connected with a multi-vibrator are provided for connection with the controller and inspiratory and expiratory valves so as to alternately operate the flow of gas in accordance with the required respiratory cycle.

3,695,264
RESPIRATORY MASK
Asmund S. Laeral, Stavanger, Norway
Filed Aug. 26, 1970, Ser. No. 67,104
Claims priority, application Germany, Sept. 2, 1969, P 19 44 548.8
Int. Cl. A62b *7/00*
U.S. Cl. 128—145.5 **8 Claims**

A respiration mask formed with a domed-shaped portion of flexible material provided at its peripheral edge with a supple

ridge which can be inflated as desired, which in the deflated



state allows the mask readily to assume a flat shape, and in the inflated state keeps the mask stretched open.

3,695,265

FACE MASK

Elmer Lawrence Brevik, 201 Via Nice, Newport Beach, Calif.

Filed Oct. 26, 1970, Ser. No. 83,693

Int. Cl. A62b *23/00*

U.S. Cl. 128—146.2 **9 Claims**

A mask for removing particulate airborne matter during inhalation employing a unique method of attachment to the face of the user consisting of an adhesive patch which attaches to the nose of the user.

3,695,266

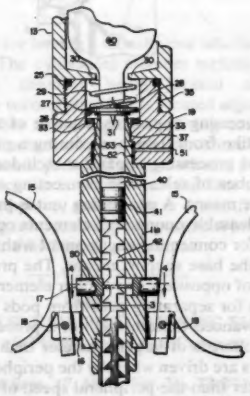
NEEDLELESS SEQUENTIAL DOSING SYRINGE

Maurice G. Lussier, 222 Maple St., Lynn, Mass.

Filed June 18, 1970, Ser. No. 47,419

Int. Cl. A61m *5/22, 5/30*

U.S. Cl. 128—173 H **9 Claims**



This invention relates to a needleless syringe for the application of a plurality of sequential doses of medicament in rapid succession without reloading, wherein the driving force is a pressurized fluid.

3,695,267

INHALATOR FOR MOIST AIR

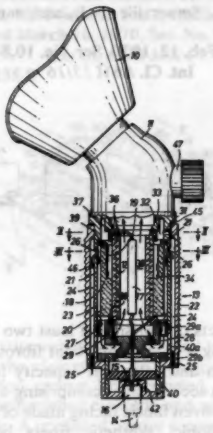
Hans Hirtz, Bonner Strasse 180, Koln-Bayenthal, and Hanns Joachim Hirtz, Peter Ebercham-Strasse 5, 5 Koln-Deckstein, both of Germany

Filed June 29, 1970, Ser. No. 50,730

Claims priority, application Germany, July 1, 1969, P 19 33 350.7; Apr. 27, 1970, P 20 20 435.7

Int. Cl. A61m *15/00*

U.S. Cl. 128—192 **19 Claims**



An inhalator has a tubular heating element through which inhaled air passes after flowing in countercurrent through an annular air passage between a tubular housing wall and a tubular porous body surrounding and abutting the tubular heating element. The porous body has capillary passages for absorbing a liquid whose vapor is added to the inhaled air in the annular passage

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3,695,268

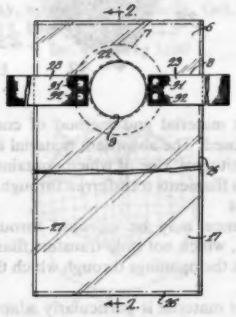
DISPOSABLE DRAINAGE POUCH FOR COLOSTOMY AND THE LIKE AND METHOD OF MAKING

Arthur E. Marsan, 1265 S. Bellare St., Denver, Colo.

Filed June 5, 1970, Ser. No. 43,676

Int. Cl. A61f *5/44*

U.S. Cl. 128—283 **12 Claims**



This invention provides a drainage pouch for use in the medical field in caring for patients having colostomy conditions and the like, characterized by a pouch of plastic film

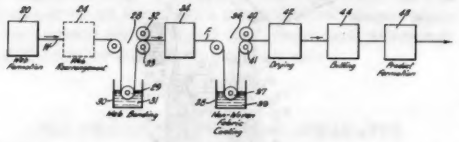
such as polyethylene, a ring-shaped retainer positioned inside the pouch and united to the inner side thereof around its stoma opening, the internal edge of the retainer being covered by an annular portion of the film pressed into the pouch to provide a protective wall which prevents the retainer from cutting and injuring the stoma; together with a method of making the pouch which promotes low cost of manufacture and provides a pouch so economical in cost as to be entirely disposable after a single use.

3,695,269

METHOD OF MAKING ABSORBENT PRODUCTS WITH HIGHLY ABSORBENT CORES AND RELATIVELY DRY FACINGS

Frank E. Malaney, Somerville, N.J., assignor to Johnson & Johnson

Filed Feb. 12, 1970, Ser. No. 10,840
Int. Cl. A61f *13/16*
U.S. Cl. 128—284 **1 Claim**



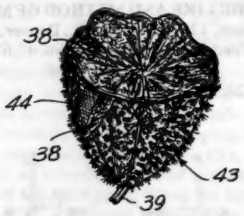
Absorbent products comprising at least two fibrous layers: one layer comprising a highly absorbent fibrous mass having excellent absorption and retention capacity for body fluids and exudates; and a second layer comprising a relatively dry, non-adherent, nonwoven fabric facing made of relatively non-absorbent, hydrophobic, synthetic fibers bonded with a hydrophobic binder material and processed so as to be provided with increased loft and bulk properties.

3,695,270

SANITARY TAMPON

Zdenek Denny Dostal, Dover, Del., assignor to International Playtex Corporation, New York, N.Y.

Filed Jan. 22, 1970, Ser. No. 5,080
Int. Cl. A61f *13/20*
U.S. Cl. 128—285 **3 Claims**



An absorbent material and method of constructing such material is disclosed. The absorbent material includes at least two united constituents, one of which contains filaments with a portion of such filaments transferred through openings in the other constituent.

The transference may be effected through the use of transfer needles, which not only transfers filaments but additionally provides the openings through which the filaments extend.

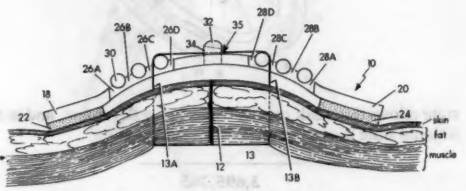
The absorbent material is particularly adapted for use in a tampon or other other catamenial device. Other uses, such as in disposable diapers or in other products where a relatively high degree of absorbency in a relatively economical product is desirable are also contemplated.

3,695,271

RETENTION SUTURE BRIDGE

Ingram S. Chodorow, New York, N.Y., assignor to Technalytics Incorporated, New York, N.Y.

Filed June 3, 1970, Ser. No. 43,008
Int. Cl. A61b *17/04*
U.S. Cl. 128—335 **22 Claims**



This invention is a retention-suture bridge designed to position and secure a retention-suture above and out of contact with an incision closure and suture exit points while maintaining lateral fixation of the suture at the points where it exits the skin, and thus effectively to join the corresponding tissue layers, approximate the original marginal pressure of the skin and underlying tissues, and ultimately prevent or reduce infection and scarring.

3,695,272

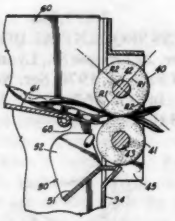
Patent Not Issued For This Number

3,695,273

FOOD PROCESSING APPARATUS

George F. Taylor, P.O. Box 625, Moultrie, Ga.

Filed Nov. 23, 1970, Ser. No. 91,662
Int. Cl. A01d
U.S. Cl. 130—30 G **14 Claims**

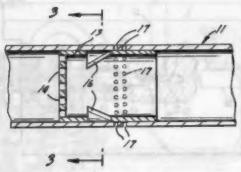


A food processing apparatus capable of separating peas, beans or the like from their pods during a processing operation. The food processing apparatus includes a support base having a number of releasable connecting elements and an operable drive means. A processing unit is provided having a number of releasable connecting elements complementary to and detailed for connecting engagement with the connectable elements on the base support means. The processing unit includes a pair of oppositely drive roller elements defining a nip therebetween for separating peas from pods in response to a pod being advanced therethrough in a processing operation. One of the rollers is of larger diameter than the other roller and the rollers are driven whereby the peripheral speed of one roller is greater than the peripheral speed of the other roller. At least one of said rollers is elliptical in cross-section whereby the nip defined between the rollers will be cyclically increased and decreased in a processing operation.

3,695,274
PISTON TYPE CIGARETTE FILTER

Thomas W. Summers, Jeffersontown, Ky., assignor to Brown & Williamson Tobacco Corporation, Louisville, Ky.

Filed Nov. 30, 1970, Ser. No. 93,560
Int. Cl. A24d *01/04*; A24f *13/04*
U.S. Cl. 131—10 A 8 Claims

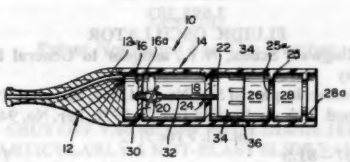


A piston-type mouthpiece for a cigarette or cigarette holder includes an outer tube in which is a slidable cup-like piston with the open end facing the smoker. The piston face has a plurality of perforations which act as a filter. As the perforations become blocked and as the density of puffs increases during the smoking of the cigarette, the vacuum created in drawing on the cigarette gradually draws the piston toward the smoker. As the piston slides toward the smoker, openings in the cylindrical wall of the piston become aligned with openings in the outer tube so that air is drawn from the atmosphere directly into the smoker's mouth through these openings rather than through the tobacco column.

3,695,275
CIGARET SMOKING DEVICE

Leonard Hayward, 32 W. 82nd St., New York, N.Y.

Filed July 30, 1970, Ser. No. 59,572
Int. Cl. A24f *47/00*
U.S. Cl. 131—171 1 Claim



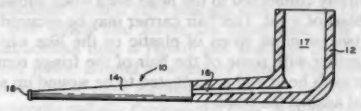
A smoking device having a mouthpiece attached to a cylindrical member. The cylindrical member includes two chambers with one chamber being located adjacent the mouthpiece. The second chamber is located adjacent the free end of the member and a cigaret receiving compartment is located thereat. Each chamber is communicated separately to ambient and means is provided so that when a person inhales on the mouthpiece air is drawn into the first chamber and through the mouthpiece, and smoke is drawn from a cigaret which is in the cigaret receiving compartment into the second chamber where it is discharged to ambient.

3,695,276
POLY(ARYLENE SULFIDE) SMOKING ELEMENT

Harold D. Coale, c/o Phillips Petroleum Company, Bartlesville, Okla.

Filed Sept. 17, 1970, Ser. No. 73,071
Int. Cl. A24f *01/18, 01/28, 01/32*
U.S. Cl. 131—191 10 Claims

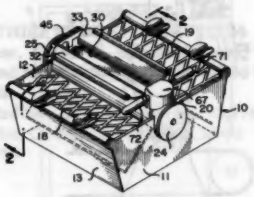
A smoking element is made partially or wholly of a poly(arylene sulfide) composition. The ease of molding such a composition allows molding said element in a conventional shape for a tobacco pipe or in a cigar shape.



3,695,277
CIGARETTE EXTINGUISHER

Dominick Moffa, 1300 Schwab Road, Hatfield, Pa.

Filed March 16, 1970, Ser. No. 19,749
Int. Cl. A24f *19/14*
U.S. Cl. 131—235 R 7 Claims

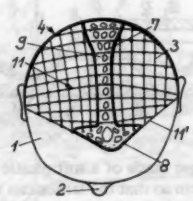


A cigarette extinguisher is constructed to receive a lighted cigarette, hold the cigarette in an extinguishing chamber in which combustion cannot be supported, and subsequently discharge the extinguished cigarette and accompanying ashes into a receptacle. A pocketed carrier rotates within a cylindrical casing bore, the casing having an upper cigarette receiving opening and a lower discharge opening. An operating and ratcheting mechanism moves the carrier stepwise in one direction of rotation only, so that a deposited cigarette may not inadvertently be returned to the receiving opening. A double ended operating arm drives the ratcheting mechanism in the said one direction irrespective of which end of the operating arm is depressed by the user. The extinguisher is combined with a receiver for the reception and collection of extinguished cigarettes. Other embodiments incorporating a button type drive and a pedestal type ash tray are also disclosed.

3,695,278
DEVICE FOR COVERING A PARTIAL BALDNESS

Arnulf Rieger, Hauptstrasse 7, 7166 Fornsbach, and Fritz Rohm, Rechte Brandstrasse 49, 89 Augsburg, both of Germany

Filed Oct. 27, 1970, Ser. No. 84,402
Claims priority, application Germany, Oct. 28, 1969, P 19 54 258.6; Nov. 13, 1969, P 19 57 182.5
Int. Cl. A41g *5/00*
U.S. Cl. 132—53 18 Claims



A device for covering a partial baldness of a person's head with a hairpiece comprising a hair carrier to which the false or

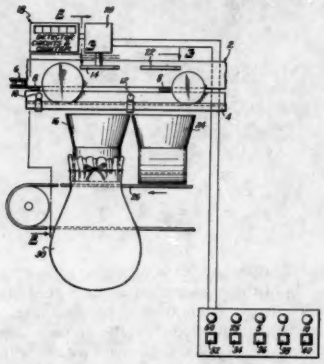
wig hair may be secured and which has a front part which extends to the normal hairline on a person's forehead and remains firmly connected to the head even when subjected to a strong blast of wind. This hair carrier may be secured to the head by two or more strips of plastic or the like which are sewed together with some of the hair of the fringe remaining on the person's head and are adapted to be wound up so as to engage flat against the head.

3,695,279

HIGH SPEED COIN COUNTING AND SORTING

Thomas J. Black, Reston, and Carl B. Sawyer, Springfield, both of Va., assignors to Werner F. Westermann, Falls Church, Va.

Filed June 14, 1971, Ser. No. 152,692
Int. Cl. G07d *3/04*
U.S. Cl. 133—3 **5 Claims**



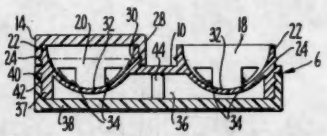
A series of coins, of randomly different denominations, is advanced along a path in controlled spaced relation and speed. As each coin passes a first position it generates a count signal that is stored long enough for the coin to reach or pass a second position. Coins of a selected denomination are deflected from the path between the first and second positions. Any coin reaching the second position generates a control signal which erases the stored count signal generated by it. Each count signal not erased by a control signal is applied to a counter to thus totalize the number of coins of said selected denomination deflected from said path, without counting coins not deflected.

3,695,280

CONTACT LENS CASE

Robert G. Sturgeon, Sunnyvale, Calif., assignor to Barnes-Hind Pharmaceuticals, Inc., Sunnyvale, Calif.

Filed Jan. 15, 1971, Ser. No. 106,842
Int. Cl. A45c *11/04*; B08b *3/04*
U.S. Cl. 134—166 R **4 Claims**



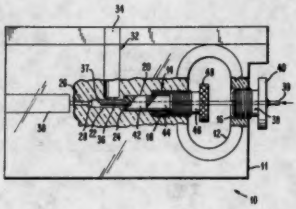
A contact lens case made of a soft plastic is described having a reservoir therein so that the lenses can be kept immersed in a soaking solution. A simple two piece structure is provided which is easily made by injection molding and an abutment means is provided between the top and bottom of the case to prevent collapse of the case.

3,695,281

METHOD AND APPARATUS FOR FLUID INJECTION

Luis P. Leon, Ossining, N.Y., assignor to Technicon Instruments Corporation, Tarrytown, N.Y.

Filed Nov. 16, 1970, Ser. No. 89,753
Int. Cl. F16k *19/00*; F17d *1/08*
U.S. Cl. 137—1 **5 Claims**



A fluid injection device for incorporation in automated apparatus for the quantitative analysis of a substance transported in a flowing liquid stream segmented by gas bubbles or other immiscible fluid segments. The device includes a body defining an elongated fluid passageway portion. One end of the passageway portion provides an inlet for fluid or gas under pressure through a tube extending into the passageway portion from the last-mentioned end toward the other end thereof, which tube has a discharge end portion received axially within the passageway portion. An inlet for unsegmented liquid under pressure communicates with the passageway portion, upstream of the aforementioned discharge end portion of the tube, providing for axial injection of gas into the stream of liquid flowing from the liquid inlet toward the other end of the passageway portion. By varying the resistance to liquid flow in the area around the discharge end of the tube the size of the bubbles injected into the liquid stream may be changed.

3,695,282

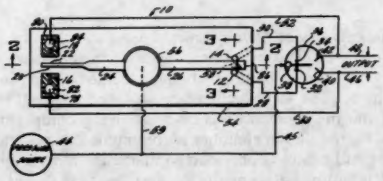
Patent Not Issued For This Number

3,695,283

FLUIDIC OSCILLATOR

Carl G. Ringwall, Scotia, N.Y., assignor to General Electric Company

Continuation-in-part of Ser. No. 804,924, March 6, 1969, abandoned. This application Dec. 2, 1970, Ser. No. 94,266
Int. Cl. F16c *3/12*
U.S. Cl. 137—81.5 **7 Claims**

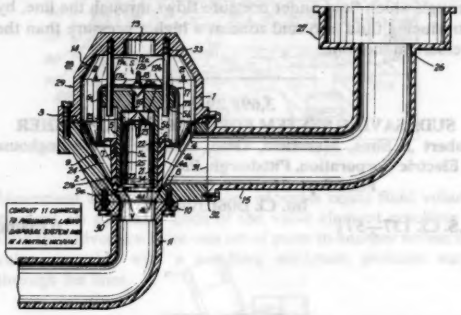


A fluidic oscillator is disclosed which incorporates a flexurally mounted jet pipe adapted to oscillate and discharge alternately into a pair of receivers. The jet pipe includes a pair of opposed reaction surfaces radially displaced from its rotational axis and aligned with a pair of driving ports. Output from the jet pipe receivers is amplified by a proportional fluid amplifier, and a negative feedback is provided whereby fluid output from the proportional amplifier is directed to the driving ports and issued therefrom as a pulsating jet stream to promote oscillation of the jet pipe. In an alternative embodiment, the proportional fluid amplifier is replaced by a digital fluid amplifier.

3,695,284
VALVE STRUCTURE FOR CONTROLLING FLOW OF LIQUID INTO A PNEUMATIC LIQUID DISPOSAL SYSTEM

Harald Anton Ake Wallgren, Alvsjo, Sweden, assignor to Aktiebolaget Electrolux, Stockholm, Sweden

Filed June 11, 1971, Ser. No. 152,276
Claims priority, application Sweden, June 18, 1970, 8434/70
Int. Cl. F16t *1/12*
U.S. Cl. 137—188 **19 Claims**



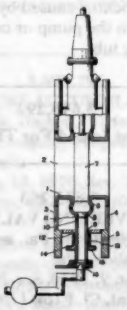
Liquid is discharged into a conduit of a pneumatic liquid disposal system from an inlet conduit. Valve structure is interposed between the inlet conduit and liquid disposal system which opens when a sufficient quantity of liquid is present in the inlet conduit and closes when the flow of liquid thereto stops. The valve structure has a flexible diaphragm which functions as a pressure sensing means and initially flexes responsive to the presence of liquid in the inlet conduit and acting on one side of the diaphragm. Such initial flexing movement of the diaphragm causes the pressure at the opposite side of the diaphragm to be reduced below atmospheric pressure and establish a pressure differential across the diaphragm to effect further movement thereof and open a main valve to enable liquid from the inlet conduit to be discharged into the pneumatic liquid disposal system.

3,695,285
Patent Not Issued For This Number

3,695,286
SHUT OFF VALVE OF LARGE DIAMETER PARTICULARLY A HOT-BLAST SLIDE VALVE

Johannes Uerlichs, Woffelsbach, and Rudolf Muller, Merzenich, both of Germany, assignors to Hermann Rappold & Co. G.m.b.H., Duren-Birkesdorf, Germany

Filed March 30, 1970, Ser. No. 23,683
Int. Cl. F16k *49/00*
U.S. Cl. 137—340 **1 Claim**

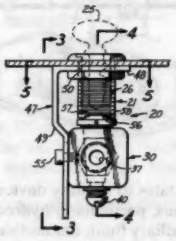


A large-diameter hot blast slide valve assembly embodying a slide valve member operable within a seat formed within a double walled casing or frame for the purpose of accommodating a coolant fluid introducable thereinto, and having a large diameter central flow passage way formed by an inner jacket wall which also forms the valve seat. One end of a cleanout/control tube is rigidly and sealingly connected with said inner jacket around an aperture formed therein generally opposite the slide valve member and its seat, and the tube projects generally radially through the outer wall of the casing or frame by passing freely through a clearance aperture therein. An outer portion of the cleanout control tube is sealingly connected but in a non-rigid manner to the outer wall of the casing by means of a relatively thin resilient or semi-flexible membrane which may in one form include an annular bellows-like construction, to thereby provide for thermal expansion and contraction movements of the tube relative to both the inner and outer casing walls to relieve potential structural stress and to preclude resultant damage otherwise attendant such thermal-stressed-induced fracturing of such valve assemblies.

3,695,287
THIEF PROOF FUEL SYSTEM

Richard T. Reese, 31701 W. Kentfield Court, Westlake Village, Calif., and Nile Ray Weatherman, 12830 Montague St., Pacoima, Calif.

Filed Nov. 27, 1970, Ser. No. 93,178
Int. Cl. B60r *25/04*; F16k *35/06*
U.S. Cl. 137—354 **2 Claims**

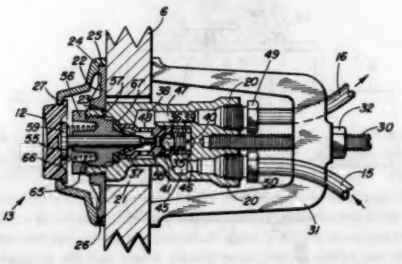


A thief proof fuel system involving the flow of gasoline from a fuel tank to an engine wherein a valve is included in the fuel line, which valve can be closed and kept locked in its closed condition. Preferably, the valve is on the opposite side of a bulkhead from the key slot, and in the preferred embodiment is under the floorboard where in modern cars there is too little clearance for a thief to tamper with the device in a practical length of time.

3,695,288
REMOTELY ACTUATED FLUSH VALVES

Henry R. Billeter, Deerfield, and Charles S. Allen, Oak Park, both of Ill., assignors to Sloan Valve Company

Filed Sept. 23, 1970, Ser. No. 74,606
Int. Cl. F16k *31/143*
U.S. Cl. 137—360 **7 Claims**



The flush valve is located behind a wall and is hydraulically actuated by a push button on the front wall. The operating

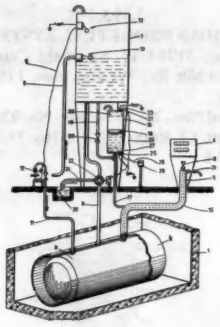
button is connected to the inlet supply line and to a piston in the flush valve handle coupling, over a pair of small copper tubes. The tubes allow for variations in roughing-in measurement and wall thickness, and can be of any length.

3,695,289

SAFETY DEVICE FOR THE STORAGE AND DISTRIBUTION OF LIQUIDS, PARTICULARLY HYDROCARBONS, MAKING USE OF A PRESSURIZED AUXILIARY FLUID

Pierre Capdevielle, Garches, and Jean Weissmann, Maisons, both of France, assignors to Institut Francais du Petrole, des Carburants et Lubrifiants, Rueil Malmaison (Huats de Seine), France

Filed Oct. 14, 1970, Ser. No. 80,695
Claims priority, application France, Oct. 16, 1969, 6935560
Int. Cl. F16k *27/00*
U.S. Cl. 137—375 **9 Claims**



This invention relates to a safety device for the storage and distribution of liquids, particularly hydrocarbons with the use of a pressurized auxiliary fluid, immiscible with any fluid to be distributed and/or separated therefrom by means of a membrane.

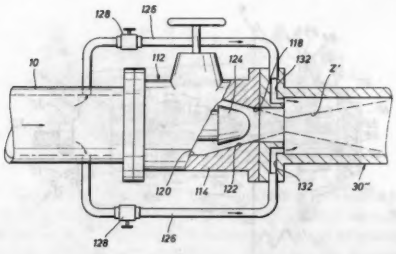
This safety device is particularly suitable for use with the storage and distribution system of the type described in the patent application entitled "New tank structure for the storage and distribution of a plurality of fluids, in particular of hydrocarbons" Ser. No. 887,679, although the use of the device according to the invention is not dependent on any particular structure of the tank for the liquid storage.

3,695,290

NOISE SUPPRESSING DEVICE FOR FLUID FLOW LINES

Kenneth R. Evans, 7015 Neff St., Houston, Tex.

Filed July 22, 1970, Ser. No. 57,233
Int. Cl. F16k *47/08*
U.S. Cl. 137—563 **2 Claims**



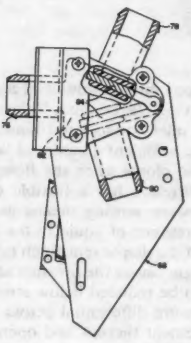
A noise suppressing device for use in flow lines in which a zone of reduced pressure is produced downstream of a restriction in the flowway, such as may be caused by the use of a flow regulating device such as a valve or orifice device in the line, and comprising means forming a passageway for the flow of fluid into said zone from a location of higher pressure. The location from which fluid flows into the reduced pressure zone may be either upstream or downstream from the zone in the flow line or from a source outside of the flow line, and means may be provided for regulating such flow. The method of the invention comprises the decreasing of noise in a flow line caused by the formation of a zone of reduced pressure therein through which fluid under pressure flows through the line, by introducing fluid into said zone at a higher pressure than the pressure in the zone.

3,695,291

SUDS SAVING SYSTEM FOR AUTOMATIC WASHER

Robert J. Sims, Mansfield, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sept. 25, 1970, Ser. No. 75,335
Int. Cl. D06f *39/08*
U.S. Cl. 137—571 **6 Claims**



The instant invention provides an automatic washer which has washing, rinsing and sud saving modes. In the suds saving mode, the wash water is pumped into a supplementary laundry tub for later reuse in the automatic washer to reduce the overall wash water requirements for the washer. A purge or "burp" function is provided for in the automatic washer after the sudsy water has been pumped into the supplementary storage receptacle so as to insure the elimination of suds within the line leading to it and also within the pump. This purging action is accomplished by the pumping of rinse water, for a short time duration, towards the supplementary storage receptacle after the rinse cycle has been completed. By the use of such an extra step with the conventional suds save mode, the pumping arrangement for the pumping of sudsy water from the supplementary storage receptacle may effectively handle the returning detergent carrying water without being disabled by air locking caused by a large amount of suds initially disposed within the pump or conduit extending to the supplementary laundry tub.

3,695,292

Patent Not Issued For This Number

3,695,293

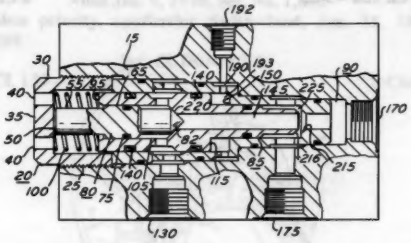
PRESSURE DIVERTING VALVE ASSEMBLY

Kenneth W. Zeuner, Newtown, Pa., assignor to Control Concepts, Inc., Pike Richboro, Pa.

Filed Sept. 9, 1970, Ser. No. 70,232
Int. Cl. F16k *11/02*
U.S. Cl. 137—625.48 **7 Claims**

A pressure diverting valve assembly permitting fluid flow through the assembly during operation and to reduce pressure

surges which may occur within inlet and outlet lines. A centrally bored valve element in the assembly has a valve seat which closes the centrally bored opening when the assembly is actuated. When the assembly is deactuated the valve element moves forward releasing the valve seat from the opening.



Movement of the poppet valve provides equal fluid volume changes on opposing ends of the valve element resulting in fluid flow diversion from one set of ports to another within the valve assembly with a resulting minimum pressure surge through the lines.

3,695,294

Patent Not Issued For This Number

3,695,295

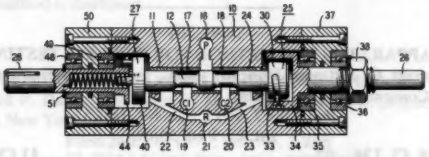
ROTARY INPUT/FEEDBACK MECHANICAL SERVO VALVE

Benny Olsen, Plainville, and Zenny Olsen, Southington, both of Conn., assignors to Allied Control Company Incorporated, Plantsville, Conn.

Filed Sept. 24, 1970, Ser. No. 75,088

Int. Cl. F17d

U.S. Cl. 137—625.69 **5 Claims**



A rotary input/feedback mechanical servo valve is disclosed which comprises a four-way linear motion spool valve, the spool of which is coupled to the rotary input shaft through a rotary-to-linear translator and to the rotary feedback shaft through a universal coupler so that rotary motion input and rotary motion feedback are translated into linear movement of the spool.

3,695,296

LIQUID PRESSURE ACCUMULATOR SYSTEMS

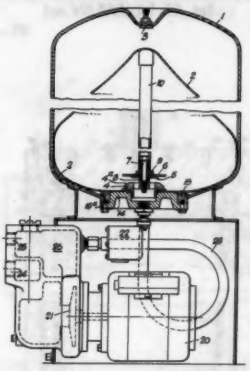
Victor Frederick Smith, Highett, Victoria, Australia, assignor to F. W. Davey and Company Proprietary Limited, Huntingdale, Victoria, Australia

Filed Aug. 10, 1970, Ser. No. 62,498

Int. Cl. F16l *55/04*

U.S. Cl. 138—30 **1 Claim**

A liquid pressure tank is provided for storing liquid under pressure for use in domestic or commercial reticulated supply of the type having an impervious bladder dividing the tank into an air chamber and a liquid chamber, a constant amount of air being maintained in the chamber under pressure. A liquid pump and pressure switch system is provided for maintaining liquid in the chamber between preset pressure limits, and the tank includes a liquid outlet control comprising a seat member and a resilient disc member mounted in spaced rela-



tion from the seat and arranged to be deformed around the seat when contacted by the bladder mounted therearound to at least partially close the outlet and prevent rupturing of the bladder when liquid is substantially exhausted from the tank.

3,695,297

COMPENSATING PRESSURE TANK FOR OIL-FILLED POWER CABLES

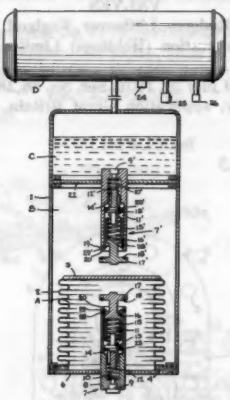
Antonio Ferrentino, Monza, Italy, assignor to Industrie Pirelli Societa per Azioni, Milan, Italy

Filed May 24, 1971, Ser. No. 146,295

Claims priority, application Italy, May 23, 1970, 25005 A/70

Int. Cl. F16l *55/04*

U.S. Cl. 138—30 **13 Claims**

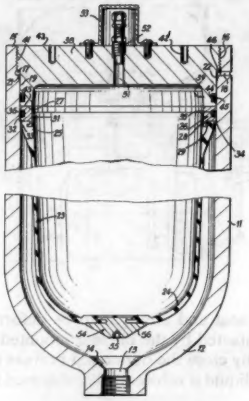


A tank contains a first chamber having a bellows-type elastic wall and has a normally open valve through which the chamber is connected to an oil-filled cable and when the chamber wall contracts sufficiently the valve is engaged by the wall and closed. The first chamber is surrounded by a fluid filled second chamber which is connected to a source of fluid through a similar valve which is normally open but which is closed by contact with a wall of the first chamber when the wall thereof expands by a predetermined amount.

3,695,298
PRESSURE VESSEL

Abduz Zahid, Monterey Park, Calif., assignor to Greer Hydraulics, Inc., Los Angeles, Calif.

Filed June 1, 1971, Ser. No. 148,523
Int. Cl. F16l 55/04
U.S. Cl. 138—30 10 Claims

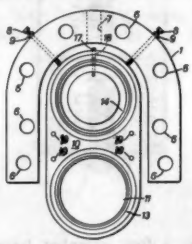


This invention relates to the art of pressure vessels, more particularly of the type using a deformable bladder having a cylindrical mouth of relatively large diameter to which is bonded a rigid annular retaining member, the latter having an annular groove in its outer periphery in which an O-ring is positioned to define a seal with respect to the side wall of the container in which the bladder is positioned.

3,695,299
VALVES

Wilfred Newrick Rodgers, Littleover, England, assignor to International Combustion (Holdings) Limited, London, England

Filed July 20, 1970, Ser. No. 56,284
Claims priority, application Great Britain, July 30, 1969, 38280/69
Int. Cl. F16l 55/10
U.S. Cl. 138—94.3 1 Claim

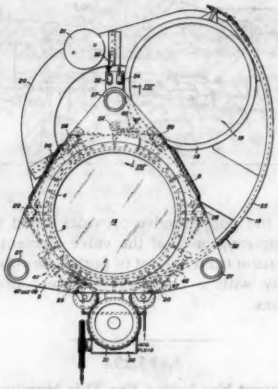


A pipe-line blind valve, for blanking off pipe-lines, in which a plate having a hole of the same diameter as the pipe-line is movable from one position, in which the hole is aligned with the bore of the pipe-line, to a second position in which the pipe-line is blanked off, there being a seal to seal between the pipe-line and the plate.

3,695,300
GOGGLE VALVE WITH LIMIT SWITCH

Norman F. Bradel, Scott Township, Allegheny County, Pa., assignor to S. P. Kinney Engineers, Inc., Carnegie, Pa.

Filed June 1, 1971, Ser. No. 148,832
Int. Cl. F16l 55/00; H01h 3/16
U.S. Cl. 138—94.3 8 Claims

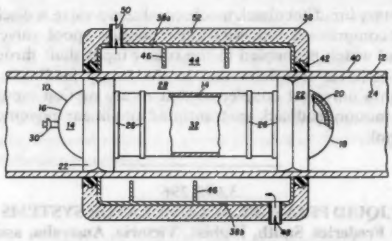


In a goggle type valve having a valve plate movable transversely of the passage through the valve between a fully open and a fully closed position with the valve body having a fixed end section at each end and an intermediate section axially movable into and out of valve plate-clamping position, there is provided a limit switch arrangement to assure proper sequencing of the axial travel of the movable member and the operation of the valve plate from one position to the other, including means for effectively amplifying the slight axial movement of the intermediate section to the desired extent for operation of the limit switches.

3,695,301
APPARATUS AND METHOD FOR PIPELINE TESTING

Forrest C. Pittman, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed June 7, 1971, Ser. No. 150,313
Int. Cl. F16l 55/10
U.S. Cl. 138—97 11 Claims



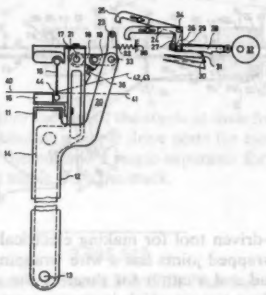
The invention relates to an apparatus and method of freezing a section of fluid-filled pipeline. The apparatus disclosed herein consists of a cylindrical body which is pumped down the pipeline to the section to be frozen. The body so positioned reduces the volume of fluid required to be frozen while shaped discs attached to each end of the body prevents fluid circulation. Also disclosed is a tank positioned around the exterior of the pipe line which contains refrigerants to freeze the fluid within the pipeline.

3,695,302

METHOD AND APPARATUS FOR PRODUCING A TERRY FABRIC ON A LOOM

Karl Jud, Ruti, Zurich, Switzerland, assignor to Ruti Machinery Works, Ltd., formerly Caspar Honegger, Ruti/Zurich, Switzerland

Filed Jan. 9, 1970, Ser. No. 1,602
Claims priority, application Switzerland, Jan. 31, 1969, 1523/69
Int. Cl. D03d *39/22*
U.S. Cl. 139—27 8 Claims



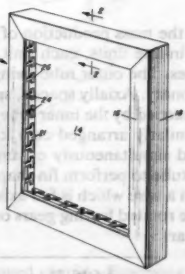
A method of producing a terry towelling on a loom wherein weft threads are beaten up in a repeating sequence at various distances from a reference fabric beat-up which comprises beating up the first weft thread of a sequence at a predetermined distance from the fabric beat-up, beating up the second weft thread of the sequence at a distance somewhat less than said predetermined distance from the fabric beat-up, beating up the last weft thread of the sequence at a distance from the fabric beat-up that corresponds to the distance of a beat-up in the case of plain weaving, and looping terry warp threads round the second weft thread. Also, apparatus for carrying out this method is disclosed.

3,695,303

HAND LOOM AND COMBINATION DISPLAY DEVICE

Donald P. Dunn, and Helen T. Dunn, both of 45 Christopher St., New York, N.Y.

Filed Jan. 16, 1970, Ser. No. 3,265
Int. Cl. D03d *29/00*; D06c *3/08*; G09f *7/06*
U.S. Cl. 139—34 5 Claims



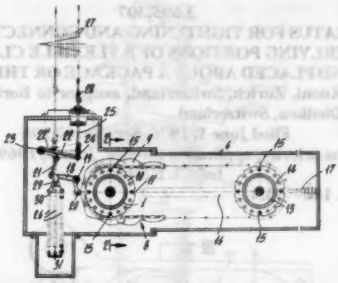
A combination loom and display device comprising a frame defining a central opening and having substantially flat front and rear surfaces spaced by connecting side walls. Yarn holding fingers extending from front wall to the rear wall but not beyond the confines of the planes of the front and rear walls.

3,695,304

DOBBY MECHANISM FOR LOOMS

Carlo Menegatto, Corso Sicilia 108/10, Milan, Italy

Filed May 18, 1970, Ser. No. 38,380
Claims priority, application Italy, 17880A/69
Int. Cl. D03c *5/00*, *13/00*
U.S. Cl. 139—78 2 Claims



Dobby having cams of a varying ratio for looms, in combination comprising a rotary cam carrying drum, interchangeably carrying a plurality of cams, each of which through a cam follower means and a suitable spring return lever system operating a corresponding heddle carrying frame in the loom. The cams may be either disc cams or chain cams at the same time winding up on a second idle drum which can be moved to or away from the first drum to accommodate chain cams of a different length for operating said chain cams.

3,695,305

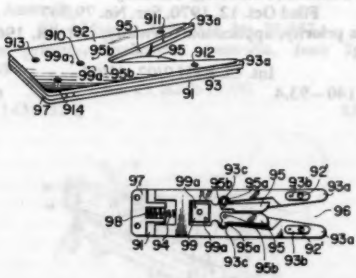
Patent Not Issued For This Number

3,695,306

YARN CARRIER FOR A WEAVING MACHINE

Hiroshiro Kimura; Heiji Arimoto; Hirohisa Nara; Tsugio Miyamatsu, and Mitsuo Kitajima, all of Kyoto, Japan, assignors to Unitaka Ltd., Higashi-Honmachi, Amagasaki-shi, Japan

Filed June 24, 1970, Ser. No. 49,476
Claims priority, application Japan, June 24, 1969, 44/59605; Mar. 31, 1970, 45/27539; Mar. 31, 1970, 45/27540
Int. Cl. D03j *5/06*
U.S. Cl. 139—125 2 Claims



A yarn carrier for a weaving machine which has two arms including a yarn gripping portion which grips the yarn by means of contact between the two arms which are resiliently biased toward each other at the front of the yarn carrier in the flying direction. The yarn carrier also has a mechanism for releasing the depression of the two arms of the yarn gripping portion by a force applied from outside against the resiliency so as to freely pass the yarn through a gap made between the arms. Also, the yarn carrier has a guide groove formed in such

a manner that width gradually decreases from the front to the rear of the feeding direction of the yarn carrier so as to feed the yarn to the yarn gripping portion and that the yarn gripping portion is formed in parallel with the flying direction of the yarn at the end portion at the inlet portion of the yarn to the yarn gripping portion of the yarn carrier.

3,695,307

APPARATUS FOR TIGHTENING AND CONNECTING THE OVERLYING PORTIONS OF A FLEXIBLE CLOSURE BAND PLACED ABOUT A PACKAGE OR THE LIKE

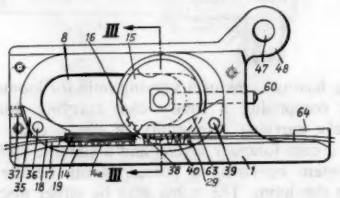
Xaver Kuoni, Zurich, Switzerland, assignor to Borbe-Wanner AG, Dietikon, Switzerland

Filed June 1, 1970, Ser. No. 42,298

Claims priority, application Sweden, June 4, 1969, 8504/69

Int. Cl. B21f *9/02*

U.S. Cl. 140—93.4 **6 Claims**



A strapping machine for tightening and connecting the overlying portions of a flexible closure band or strap placed about a package, one part of the machine serving to tension or tighten the strapping band, another part of the machine serving to interconnect the superimposed or overlapping portions of the strapping band by carrying out a common deformation thereof. According to the invention, this last-mentioned forming or deformation part of the machine consists of at least two deforming or shaping members situated at opposite sides of the band portions and wherein at least one of these deforming members incorporates means for bringing about the connection of the band portions, which means is situated in a circular orbit or path and such deforming member is mounted to be positively rotatable and displaceable in the lengthwise direction of the strapping or closure band.

3,695,308

TOOL FOR TIEING BUNDLES OF CABLES

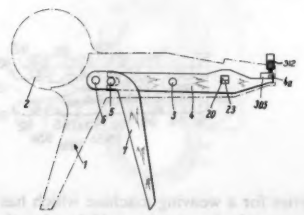
Heinrich Kabel, Quickborn, Germany, assignor to Paul Hellermann G.m.b.H., Pinneberg, Germany

Filed Oct. 12, 1970, Ser. No. 79,967

Claims priority, application Germany, Oct. 18, 1969, P 19 52 618.2

Int. Cl. B21f *9/02, 45/00*

U.S. Cl. 140—93.4 **6 Claims**



A tool having actuating means for securing the ends of tie straps on bundles of cables or the like by means of locks, and/or for cutting off excessive strap material. A linking device is provided to operatively connect the actuating means to shifting means for the locks so that the latter will be automatically transferred from a magazine to holding means during operation of the tool.

3,695,309

POWER OPERATED WIRE WRAPPING TOOLS

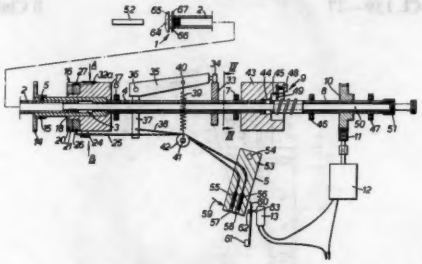
Frederick George Finn, Sevenoaks, Kent, England, assignor to The Post Office, London, England

Filed Aug. 28, 1970, Ser. No. 67,948

Claims priority, application Great Britain, Sept. 8, 1969, 44276/69

Int. Cl. B21f *15/04*

U.S. Cl. 140—124 **14 Claims**



A motor-driven tool for making electrical connections by means of wrapped joints has a wire wrapping and insulation stripper head and a cutter for shearing the wire. The tool is controlled by a trigger which is also connected to the cutter. Operation of the trigger first actuates the cutter and then the motor.

3,695,310

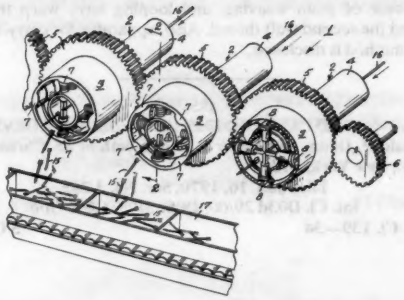
FLECHETTE MANUFACTURING MACHINE

Vincent J. Donadio, Pompton Plains, N.J., assignor to The United States of America as represented by the Secretary of the Army

Filed Nov. 2, 1970, Ser. No. 86,009

Int. Cl. B21f *45/00;* **B21g** *3/20, 3/24, 3/28*

U.S. Cl. 140—71 **2 Claims**



A machine for the mass production of flechettes consisting of a plurality of in-line units, each unit including outer and inner coaxial tubes. The outer tube being rotatable while the inner one is stationary. Axially spaced, spring loaded, radially slidable dies are carried by the inner tube and the outer tube is provided with similarly arranged cam lobes which force the dies inwardly and simultaneously or sequentially upon rotation of the outer tube to perform fin shaping, pointing and cutoff operations on a wire which is fed axially through the inner tube. All units are rotated by ring gears on the outer tubes and a single driven gear.

3,695,311

WIRE TIEING TOOL

Thomas J. Hanigan, 60 Greenwich Rd., Longmeadow, Mass.

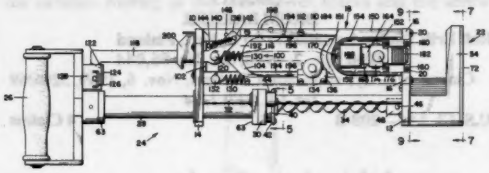
Filed Nov. 10, 1970, Ser. No. 88,349

Int. Cl. B21f *9/02, 7/00, 15/04*

U.S. Cl. 140—93.6 **4 Claims**

An automatic tieing or wire twisting tool for fastening structural elements together, such as intersecting pairs of angularly

disposed reinforcing rods, in a latticework common in building and road construction, by way of fitting around the rods at each intersection thereof a U-shaped staple and therefollowing twisting together the legs of the staple at their free end portions, the tool including a staple drive plate for ejecting a staple from a stack thereof and a staple separator for separating the next adjacent staple from the stack.



3,695,312

Patent Not Issued For This Number

3,695,313

Patent Not Issued For This Number

3,695,314

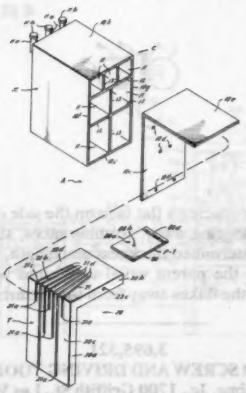
LIQUID DISPENSING APPARATUS AND METHOD

Woodrow H. Watts, and George A. Bartlett, both of 8611 Glenlea, Houston, Tex.

Filed July 22, 1970, Ser. No. 57,228

Int. Cl. B67d *5/08*

U.S. Cl. 141—59 **22 Claims**



A new and improved liquid dispensing apparatus and method wherein a plurality of various liquids, such as for example, alcoholic and non-alcoholic beverages, each stored in separate containing means, are selectively chosen and permitted to flow or be drawn from the containing means into a glass or other receptacle in response to predetermined flow regulation imposed by a dispensing control apparatus to form desired combinations and mixes of the liquids.

3,695,315

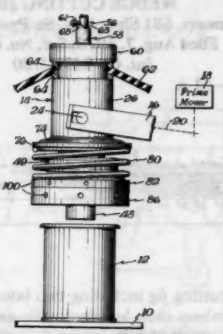
CONTAINER FILLER-VALVE VOLUME ADJUSTMENT

David M. Ayars, Jr., Salem, N.J., assignor to Ayars Filler, Inc., Salem, N.J.

Filed Oct. 16, 1970, Ser. No. 81,299

Int. Cl. B65b *1/04, 3/04*

U.S. Cl. 141—368 **6 Claims**



A container filling-valve includes a valve body having two generally hollow cylindrical sections mounted to have relative axial movement. The two sections are biased by a spring to have relative movement in a first sense. One of the sections (the upper) has an inlet for the filling material; the other section (the lower) has a discharge port for discharging the fluid material into a container to be filled. A valve member cooperates with the discharge port to control fluid flow therethrough and is normally biased to a closed position. A flexible diaphragm connects the two sections. When the upper section is moved sufficiently for the container to be contacted, the valve is opened. The valve has a seal means which engages the upper rim of the container to be filled. The seal means includes an annular flange-like member threadedly engaged to the lower valve section such that rotation of the annular member permits it to be axially positioned along the lower section thereby to adjust the extent to which the lower valve section can extend into the container and thus control the volume of fluid deposited in the container. A friction locking nut adapted to frictionally engage the flange-like member permits the flange-like member to be locked into its adjusted position.

3,695,316

SAWING TIMBER

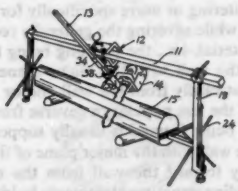
Patrick J. Pluckhahn, Cnr. Reef & Templeton St., Maldon 3463, Australia

Filed May 19, 1970, Ser. No. 38,852

Claims priority, application Australia, June 2, 1969, 55910/69

Int. Cl. B27b *17/00*

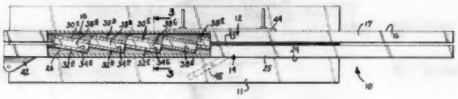
U.S. Cl. 143—32 Q **13 Claims**



The present invention provides a portable timber milling jig the use of which makes it possible to obtain sawn timber from felled logs. The jig comprises a beam along which runs a carriage adapted to support a chain saw, circular saw or reciprocating saw. The beam is supported at either end by a vertical stand which is also clamped into an end of a log to be

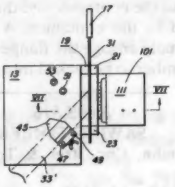
sawn, the log being positioned below the beam. As the carriage is moved along the beam, the saw supported by the carriage cuts through the log. By making a number of parallel cuts at right angles to each other, sawn timber is obtained.

3,695,317
WEDGE CUTTING JIG
Edwin F. Timmers, 681 Sims Ave., St. Paul, Minn.
Filed Aug. 7, 1970, Ser. No. 62,097
Int. Cl. B27b *5/00*
U.S. Cl. 143—51 A **7 Claims**



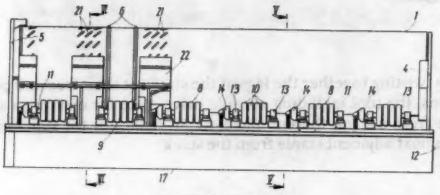
A wedge cutting jig including two laterally spaced complementary members each longitudinally extended and having a plurality of longitudinally spaced wedged-shaped recesses along adjacent vertical faces thereof. The wedge-shaped recesses of one member are oppositely disposed from the wedge-shaped recesses of the other member and each pair of oppositely disposed recesses is complementary so as to form a plurality of rectangular openings for holding pre-cut rectangular pieces of wood. A power saw is run between the adjacent first faces cutting each rectangular piece of wood into two wedges which are then deposited into a receptacle through the open bottom of the jig.

3,695,318
COMPOUND MITERING DEVICE
Lawson D. Maury, 510 Colonial Rd., Memphis, Tenn.
Filed Oct. 21, 1970, Ser. No. 82,740
Int. Cl. B27b *27/06;* **B25b** *5/14*
U.S. Cl. 144—35 **9 Claims**



A device for precision mitering or cutting linear framing material to specified lengths suitable for framing different size openings, e.g., a painting having a length of 40 inches and a width of 20 inches. The device includes structure for facilitating compound mitering or more specifically for properly aligning and holding while severing the generally recognized standard framing material, i.e., the painting being framed is supported close to the wall with the major plane of the frame being directed outwardly from the wall and/or the surface of the painting, and the less popular or reverse framing material, i.e., the painting being framed is usually supported a greater distance from the wall with the major plane of the frame being directed inwardly toward the wall from the surface of the painting. The holding structure clampingly holds two pieces of framing material simultaneously so that the one end of opposite sides of the frame, e.g., the two 40 inch pieces may be simultaneously mitered with one pass of the severing means and the other end of the two 40 inch sides may be mitered with a second pass of the severing means then the two 20 inch sides are likewise mitered resulting in precision fitted joints at the corners of the frame. The device also includes drill guide structure for accurately guiding a drill while a dowel pin hole is drilled into the severed butt end of the pieces of framing material. The accurately placed dowel pin greatly simplifies the task of rigidly joining the adjacent sides to a precision fit.

3,695,319
DRUM BARKER
Rolf Erik Tuuha, Lansipuisto 20 C, Pori, Finland
Filed Nov. 2, 1970, Ser. No. 86,044
Claims priority, application Finland, Nov. 6, 1969, 3206/69
Int. Cl. B27l *1/04*
U.S. Cl. 144—208 B **4 Claims**



A drum barker including a cylindrical drum having debarking means. The drum is supported by wheels on both sides, the wheels including elastic outer portions. A guide ring assembly is provided on the drum periphery for contacting wheel portions to resist axial drum movement. The guide ring assembly includes at least two guiding faces which extend obliquely from the drum periphery in a direction away from the wheel portions to reduce wearing of the wheel portions and to cushion the forces imparted during axial contact of the wheel portions and guide faces.

3,695,320
METHOD FOR IMPROVED PRODUCTION OF WOOD FLAKES
Donald L. Johnson, 1816 N. Lenore Dr., Tacoma, Wash.
Division of Ser. No. 630,396, April 12, 1967, Pat. No. 3,526,258. This application Aug. 27, 1970, Ser. No. 67,303
Int. Cl. B27l *11/04*
U.S. Cl. 144—326 **3 Claims**

Method for producing a flat face on the side of a log or cant and including hogging away protuberances, slicing of wood flakes to a predetermined thickness and length, jet breaking of the flakes from the parent wood to desired width and then fluid conveying the flakes away from the cutterhead assembly.

3,695,321
CAVITY HEAD SCREW AND DRIVING TOOL THEREFOR
Jacob W. Garehime, Jr., 1700 Griffith St., Las Vegas, Nev.
Continuation-in-part of Ser. No. 827,627, May 26, 1969. This application June 30, 1970, Ser. No. 51,152
Int. Cl. B25b *15/02;* **F16b** *23/00*
U.S. Cl. 145—50 **6 Claims**

The upper surface of the head of a screw has wedge-shaped cavities arranged on either side of, or around, a central hub or land. The cavities have undercut sidewalls, and the land has a central hole, preferably circular. A driving tool such as a screwdriver, or the like, is provided with multiple blades which are spaced apart on either side of or around a central

aperture. A central pin depends from the shank of the screwdriver and is adapted to engage the hole in the central land of the screw. The bottoms of the screwdriver blades are of expanded thickness so that when these blades are inserted in and engage the screwhead cavities, the expanded bottom portions of the blades will lock under the undercut sidewalls of the cavities. Mating of the screwdriver blades and the screw

head cavities is guided, aligned and axially stabilized by engagement of the screwdriver central pin in the hole in the central land of the screwhead surface. Expandable pin sections maintained under tension may be employed to temporarily lock a screw onto the screwdriver blades and held in positive axial alignment with said screwdriver for insertion and withdrawal.

3,695,322

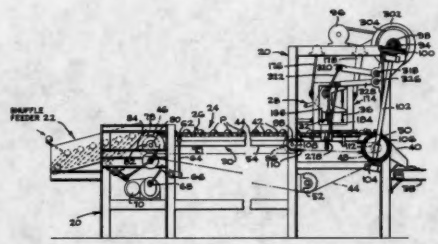
PEACH PITTER

Gerald R. Anderson, Campbell, and William C. Wann, Jr., San Jose, both of Calif., assignors to FMC Corporation, San Jose, Calif.

Filed Aug. 5, 1970, Ser. No. 61,210

Int. Cl. A23n *3/08*

U.S. Cl. 146—28 R **4 Claims**



An apparatus for pitting peaches comprising a multiple lane orienter for aligning the peaches so that their suture planes are transverse to the direction of motion through the apparatus. A continuous cup conveyor has transverse rows of apertured fruit products that move with a swinging pitting head. The head has a row of bifurcated peach splitting and pit gripping blades descend on the peaches while peach incising and pit gripping blades are projected up through the cup apertures. The upper blades are then spread apart to separate the peach halves from their pits.

3,695,323

VEGETABLE TRIMMING AND CUTTING APPARATUS

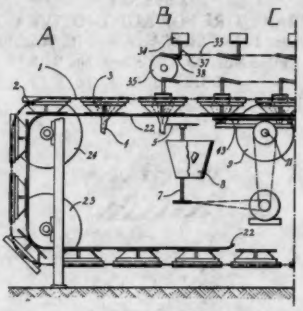
Yngve Reinhold Akesson, Halsingborg, and Lars Gustaf Albert Wadell, Astorp, both of Sweden, assignors to Produits Findus S.A., Vevey, Switzerland

Filed Oct. 29, 1970, Ser. No. 85,188

Claims priority, application Great Britain, Nov. 3, 1969, 53,730/69

Int. Cl. A47j *21/00, 17/16, 43/18*

U.S. Cl. 146—81 R **9 Claims**



Apparatus for continuously trimming and cutting broccoli or similar plants, which comprises:

an endless conveyor carrying a plurality of pockets,

each pocket comprising at least two equal segments defining an axially symmetrical hollow enclosure having a wider opening and a narrower opening at opposite axial ends to receive a plant with the lower stalk protruding through the narrower opening,

the segments being separated by diametrically opposed gaps parallel to the axis of the pocket,

the segments being independently pivoted at a point adjacent said wider opening to open outwards to release the plant,

and at least one knife positioned to traverse said gaps when the gaps are aligned in the direction of motion of the conveyor to slice the planes. Other features of the invention appear in the following specification and drawings.

3,695,324

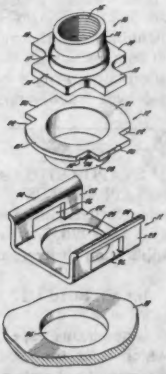
FLOATING NUT ASSEMBLY

Bulent Gulistan, Malibu, Calif., assignor to Deutsch Fastener Corp., Los Angeles, Calif.

Continuation-in-part of Ser. No. 855,834, Sept. 8, 1969, abandoned. This application Jan. 9, 1970, Ser. No. 1,706

Int. Cl. F16b *37/04*

U.S. Cl. 151—41.74 **15 Claims**



A floating nut device including a receptacle portion having side openings receiving tabs projecting outwardly from a nut

and providing clearance to allow floating movement of the nut, the receptacle including an exteriorly knurled tubular portion to be extended through an opening in a workpiece and bent outwardly at its end to form a flange used in connecting the assembly to the workpiece. The nut may be retained by one member of spring material having deflectable walls to allow replacement of the nut, while the tubular portion is of malleable material to permit the flange to be bent.

3,695,325

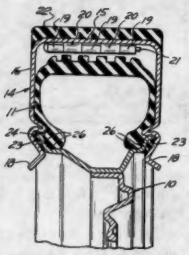
TEMPORARY TIRE FOR AUTOMOTIVE VEHICLES

Mark Schuman, 101 G. St. S.W., Apt. 516, Washington, D.C.

Filed Nov. 23, 1970, Ser. No. 91,839

Int. Cl. B60c *27/16*

U.S. Cl. 152—225 **5 Claims**



A temporary vehicle tire in the form of a wide, chain-like strip wrapped around the periphery of an automotive vehicle pneumatic tire mounted upon the rim of a vehicle wheel, the strip having spoke-like legs extending radially inwardly on opposite sides of the pneumatic tire and frictionally clamped to the side edges of the rim to form an independent outer wheel tread or tire.

3,695,326

TIRE FABRIC

Michael I. Bryant, High Point, and Charles E. Jones, Greensboro, both of N.C., assignors to Burlington Industries, Inc., Greensboro, N.C.

Continuation-in-part of Ser. No. 29,302, April 16, 1970. This application Jan. 12, 1971, Ser. No. 105,969

Int. Cl. B60c *9/00*

U.S. Cl. 152—358 **8 Claims**

A tire fabric comprising glass warp and filling yarns, the warp and filling yarns being bonded together at cross-over points by a thermoplastic resinous bond which essentially welds the cross-over points whereby slipping or sliding movement between the warp and filling yarns is precluded, the warp and filling yarns, including the thermoplastic bond being treated with a tie coat composition for bonding to tire rubber, the tie coat composition comprising a synthetic rubber latex and resorcinol-formaldehyde reaction product.

3,695,327

WIPED THIN FILM EVAPORATION AND TREATMENT APPARATUS

Fritz Widmer, Fallanden, Switzerland, assignor to Luwa AG

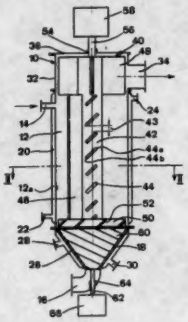
Filed March 18, 1970, Ser. No. 20,674

Claims priority, application Switzerland, March 21, 1969, 4281/69

Int. Cl. B01d *1/22*

U.S. Cl. 159—6 W **9 Claims**

A thin film treatment apparatus, especially for treatment of viscous materials, which is of the type comprising a rotationally symmetrical treatment chamber which is surrounded by a heating- or cooling jacket and which contains a rotor. The rotor is equipped with material conveying means which are inclined with respect to the axis of rotation of the rotor. Further, the rotor is provided with wiper means which extend generally axially and are arranged in offset fashion with respect to the conveying means in the peripheral or circumferential direction. According to an important aspect of the invention, the conveying means are formed of a plurality of vane stubs arranged in at least one axial row, wherein the confronting ends of neighboring vane stubs, viewed in the axial direction, are spaced from one another and, in each instance, form a gap. Further, the wiper means are offset in trailing fashion with respect to the row of vane stubs through an angle less than 90° in the direction of rotation of the rotor and at least partially bridge/or overlie the gap between neighboring vane stubs.



3,695,328

Patent Not Issued For This Number

3,695,329

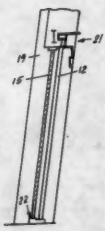
TENSION DRAPERY

Max F. Roller, Lincolnwood, Ill., assignor to Art Drapery Studios, Inc., Chicago, Ill.

Filed March 30, 1970, Ser. No. 23,627

Int. Cl. A47h *5/00*

U.S. Cl. 160—84 **12 Claims**



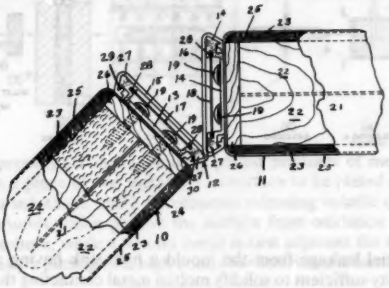
A tension drapery employs a pair of spaced-apart trackways for receiving and guiding a plurality of drapery carriers which support the drapery under tension. The trackways are mounted at an angle to the vertical requiring additional tensioning of the drapery to prevent sag of the material. The drapery has hinged apparatus adjacent the trackways to assist in defining and maintaining elongate folds therebetween. Alternate hinge sections have drapery attachment apparatus for releasably engaging mounting rods of the individual carriers. The carriers of a trackway are serially connected by cross-coupled wire springs received in each carrier by means form-

ing shaped cavities which prevent the wire springs from turning in a reverse direction upon folding of the drapery.

3,695,330
HINGE CONNECTION FOR PANEL AND PANEL COMBINATION

Gene B. Hasbrouck, Corry, Pa., assignor to The Singer Company, Elizabeth, N.J.

Filed April 30, 1970, Ser. No. 33,215
Int. Cl. E06b *3/48*
U.S. Cl. 160—135 **5 Claims**

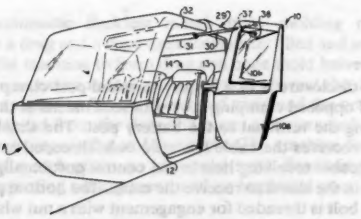


This specification discloses a hinge for connecting a panel or the like to a support or for connecting two panels together. In the example, the hinge is shown connecting two panels. A bracket is attached to the edge of each panel adjacent the other. These brackets extend from the top of each panel to the bottom. Flexible hinge strips are supported between the panel edges. Each hinge strip has one of its edges clamped under one edge of one of the brackets and its opposite edge clamped under the opposite edge of the bracket on the other panel. Each alternate strip has its opposite edge clamped under the opposite edge of the bracket. Thus, each strip in a sense crosses the strip above it, and the strip below it, so that the panels may swing either direction relative to each other.

3,695,331
TWO PART DOOR MOUNTING AND OPERATING MECHANISM

Charles R. McClain, Chula Vista, Calif., assignor to Rohr Corporation, Chula Vista, Calif.

Filed Nov. 19, 1970, Ser. No. 90,941
Int. Cl. E05b *15/28, 15/00*
U.S. Cl. 160—187 **12 Claims**

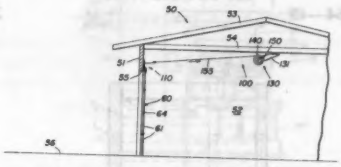


A door structure capable of widely divergent uses comprises two door portions connected together by hinged connection and mounted on the outer end of a power actuated, axially extensible and retractable thrust member. Extension of the thrust member carries the door half portions bodily outwardly from the door opening, and vice versa, while a pair of door folding links are connected at one end thereof, one to each door, and at the other end thereof to a spring biased anchor member to swing the door portions toward each other to folded condition on opposite sides of the thrust member when the latter is extended, and apart toward door closing position when the thrust member is retracted.

3,695,332
DOOR OPERATING MECHANISM

Erwin B. Bahnsen, Oakbrook, Ill., assignor to Steiner American Corporation, Salt Lake City, Utah

Filed May 25, 1970, Ser. No. 40,289
Int. Cl. E05f *15/12*
U.S. Cl. 160—188 **5 Claims**

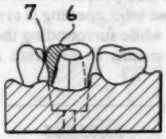


An automatic operator for an overhead garage door gravity-biased to a closed position includes a keeper centrally positioned on the garage above the doorway, a pivotally biased latch member secured to the top of the door and spring-biased into a locking configuration wherein it is engageable with the keeper for locking the door in its closed position, a reel mounted in the garage above the top of the door centrally thereof, a cable interconnecting the reel and the latch member, a reversible electric gear head motor coupled to the reel for rotating same in a winding direction to unlock the latch and open the door and in an unwinding direction to permit closing of the door and locking thereof by the latch member, means for actuating the motor, and motor control circuitry including a screw-type limit switch responsive to rotation of the reel for deactuating the motor after opening or closing of the door.

3,695,333
METHOD OF FABRICATING DENTAL CROWNS AND BRIDGES FROM GOLD

Eugene Costa; Lucian Ene; Stelica Dumitrescu, and Ioan Covaci, all of Bucharest, Romania, assignors to Policlinica de Stomatologie Protetica, Bucharest, Romania

Filed Sept. 23, 1970, Ser. No. 74,821
Int. Cl. B22c *9/04*; **A61c** *13/20*
U.S. Cl. 164—35 **9 Claims**



The invention refers to a fabricating method for one-piece cast dental crowns, with controlled thickness, as well as for dental bridges consisting of crowns and the bridge body. To this end a calibrated wax cylinder is placed on the tooth stump, this cylinder being flared in order to form proximal contact points with the adjoining teeth, thus realizing practically also the control of thickness; over the wax cylinder a lid is applied at the level of the occusal surface and in which the occlusal relief is fashioned in relation to the contact points of the antagonistic teeth. In the case of dental bridges, the patterns of the respective crowns are fashioned first, as above, then the pattern of the bridge body which is united with the

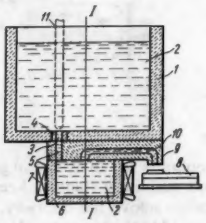
pattern of the crowns, after which follows the casting of the entire assembly from a gold alloy.

3,695,334

METHOD AND APPARATUS FOR CASTING WITH REVOLVING MAGNETIC FIELD CONTROLLING POURING

Alexandr Vasilievich Khripkov, Lev Borukhovich Shenderov, and Igor Borisovich Kazarinov, all of Gorky, U.S.S.R., assignors to Gorkoysky Filial Tsentralnogo nauchno-issled-ovatelskogo instituta metallurgii i Svarki, Gorky, U.S.S.R.

Filed Nov. 18, 1970, Ser. No. 90,520
Int. Cl. B22d *27/02*
U.S. Cl. 164—49 **2 Claims**



An apparatus for casting molten metal from a casting container having an outlet hole, comprises a batching container which is connected at the bottom of the casting container so that the outlet hole of the casting container is off-set from a vertical axis of the batching container towards the periphery thereof; the batching container is provided with means to generate a rotating electromagnetic field in a peripheral direction thereof to impart rotation to the metal in the batching container and to develop under the effect of centrifugal forces a counterpressure to the thrust of the metal coming into the batching container; casting of molten metal is effected from the central portion of the batching container, variation of the induction of the rotating electromagnetic field causing a variation of the rotation speed of the metal and, together with the latter, of the counterpressure to the thrust of the metal being supplied to said batching container, said counterpressure determining the batching of metal. The apparatus is characterized in that the batching container provided has an upper cover to close the container and form a chamber, the cover being provided with an entry aperture substantially near the periphery of the batching container and communicating with the outlet hole of a casting container; said cover of the batching container is also provided with a conduit for the exit of molten metal whose inlet opening is arranged in the central portion of the cover, while surrounding the batching container there is provided a means to generate a rotating magnetic field.

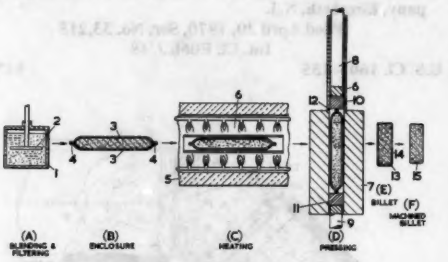
3,695,335

PROCESS FOR MAKING COMPOSITE MATERIALS FROM REFRACTORY FIBERS AND METAL

John Corjeag Cannell, 76, Monkswood Ave., Waltham Abbey, Essex; Rodney Seymour Leaper, Silverburn, 3, Park View, Hoddesdon, Hertfordshire, and Noel James Parratt, 18, Tycehurst Hill, Loughton, Essex, all of England

Filed Sept. 8, 1970, Ser. No. 70,455
Claims priority, application Great Britain, Sept. 10, 1969, 44,612/69
Int. Cl. B22d *19/02*
U.S. Cl. 164—97 **20 Claims**

A process for the manufacture of a composite material comprises providing in a mould an admixture of reinforcing refractory fibers and a molten metal, applying to the admixture an encapsulating pressure program until a desired densification is achieved and at least during initial application of the encapsulating pressure program arranging adjacent each path of



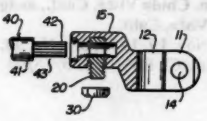
potential leakage from the mould a heat sink having a heat capacity sufficient to solidify molten metal contacting the heat sink and thereby seal the said leakage path.

3,695,336

METHOD OF MAKING BATTERY POST TERMINAL CLAMP

John K. Shannon, Kenosha, Wis., assignor to Quick Cable Corporation, Kenosha, Wis.

Division of Ser. No. 796,458, Feb. 4, 1969, Pat. No. 3,588,790.
This application July 31, 1970, Ser. No. 67,669
Int. Cl. B22d *19/00*
U.S. Cl. 164—98 **1 Claim**



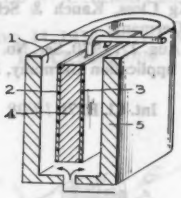
The disclosure is of a battery terminal post clamp having a pair of opposed clamping jaws with stud means at the end for securing the terminal to the battery post. The shank portion which receives the cable has a tie bolt, threaded at one end, with a cable receiving hole in the central portion aligned with a hole in the shank to receive the cable. The bottom portion of the tie bolt is threaded for engagement with a nut which, when the end of the cable is inserted in the tie bolt hole, can be turned to thereby jammingly engage the cable end forming a physical and electrical bond with the battery terminal. The method of manufacture contemplates a die casting in which the tie bolt itself serves as a core member, and an additional core is inserted through the hole in the tie bolt to the end that the tie bolt is perfectly aligned in the precast battery terminal, and in a sense is press-fittingly engaged therein, subject to dislodgment only by turning the fastening nut to engage the cable end.

3,695,337

PROCESS FOR MANUFACTURING PLATED PRODUCTS

Rene Grand, Unieux, France, assignor to Compagnie des Ateliers et Forges de la Loire (St. Chamond, Firminy, St. Etienne, Jacob-Holtzer), Paris, France

Filed Oct. 7, 1970, Ser. No. 78,689
Claims priority, application France, Oct. 10, 1969, 6934722
Int. Cl. B22d 19/08
U.S. Cl. 164—100 17 Claims



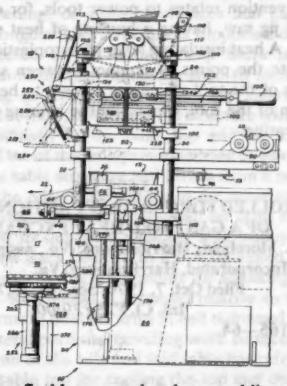
A process for manufacturing plated products of metals in which a piece of one metal has its surface to be plated coated with a substance which decomposes releasing volatile organic compounds which protect the surface from oxidation by the atmosphere, while a second metal is cast adjacent the surface whereby a plating with high bond characteristics is formed.

3,695,338

MOLDING MACHINE

Anthony S. Masi, 755 East 43rd St., Erie, Pa.

Continuation-in-part of Ser. No. 775,711, Nov. 14, 1968, abandoned. This application July 29, 1970, Ser. No. 59,181
Int. Cl. B22c 17/08
U.S. Cl. 164—181 24 Claims



An automatic flaskless match plate molding machine wherein a drag and a cope are successively filled and squeezed within the machine to form drag and cope mold halves; transferred to an exterior core setting station whereat the drag and cope are closed to form a completed mold and the completed mold stripped from the drag and cope; and retracted into the machine to repeat the molding cycle. The machine features a universal match-plate, an improved sand dispensing, sifting and compacting arrangement, and an improved pour opening former.

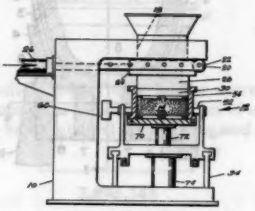
3,695,339

MOLD FORMING APPARATUS

Russell W. Taccone, Erie, Pa., assignor to Bangor Punta Operations, Inc., Greenwich, Conn.

Filed Sept. 8, 1970, Ser. No. 69,998
Int. Cl. B22c 17/00
U.S. Cl. 164—213 6 Claims

One form of mold forming apparatus includes a carriage mounting a flask, the carriage being movable horizontally between a mold forming position and a position adjacent a mold discharging station. In the mold forming position, the flask and a lower pattern plate form a mold chamber into which sand is deposited. The flask and lower pattern plate are then moved vertically to compress the sand against an upper pattern plate. After the mold is formed, the flask and lower pattern plate are returned to their initial position. The lower pattern plate is then lowered away from the flask and the flask is rotated ninety degrees. The carriage is then moved to the discharge station and a pusher element discharges the mold from the flask onto a support. In another form, a pair of horizontally movable carriages mount vertically movable flasks. Respective lower cope and drag pattern plates and the flasks are movable vertically upwardly to compress the sand and form molds. When returned, and the lower pattern plates are moved away from the flasks, the flasks are rotated ninety degrees. The flask carrying carriages are then moved toward the discharge station to butt the molds and thereby form the mold cavity and for discharge of the molds onto a support.

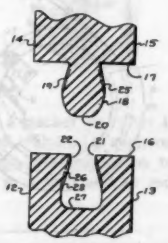


3,695,340

MULTI-PART COMBUSTIBLE CASTING PATTERN HAVING BEND-RESISTANT GLUE-LESS JOINTS

Jerome A. Gross, Clayton, Mo., assignor to John T. Parsons, Traverse City, Mich.

Filed May 4, 1970, Ser. No. 34,418
Int. Cl. B22c 7/02
U.S. Cl. 164—246 4 Claims



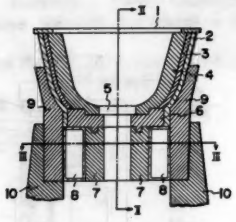
Combustible low density polystyrene casting patterns and their gate portions are securely assemble at mating surfaces, by forcing integral reverse-tapered tongues into tapered undercut grooves. A tool insertion opening into the undercut of each groove permits carving the pattern parts by a powered rotating cutting tool. The tongues and grooves are so proportioned that the partial elasticity of the low density polystyrene offsets permanent deformation suffered on assembly. Their interfit provides a tight joint sealed against the entrance of casting sand and which resists ending when sand is packed about the assembled pattern.

3,695,341

RECIPROCATING MOLD CONTINUOUS CASTING APPARATUS

Shigeki Soeda, and Hidetaro Nemoto, both of Kawasaki, Japan, assignors to Nippon Kokan Kabushiki Kaisha

Filed Nov. 4, 1970, Ser. No. 86,896
Claims priority, application Japan, Nov. 19, 1969, 44/92411
Int. Cl. B22d *11/10*
U.S. Cl. 164—260 **7 Claims**



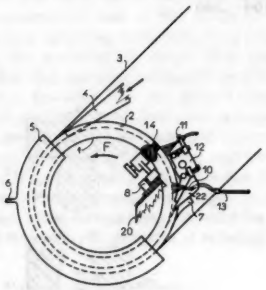
Continuously casting molten metal into a mould through an opening of a tundish, the mould is directly connected to the tundish through a refractory coupling piece secured to the tundish around the opening, reinforcing members are secured to the side surfaces of the tundish to reinforce the connection between the same and the mould and an oscillating mechanism is connected to the reinforcing members to oscillate in the vertical direction the tundish together with the mould.

3,695,342

CONTINUOUS CASTING MACHINE WITH CONTROLLED EXTRACTOR MOVEMENT

Robert Petit, 11, rue du General Leclerc, 93 Rosny-Sous-Bois, France

Filed March 9, 1970, Ser. No. 17,624
Int. Cl. B22d *11/06*
U.S. Cl. 164—268 **24 Claims**



A casting machine includes a casting wheel (1), which continually rotates in the direction of the arrow F, and which has a groove (2) about its periphery. The groove (2) is surrounded by a moving belt (3) which forms a moving casting chamber into the upstream end of which molten metal is injected by a nozzle (4). A continuous cast product (7) is freed from the end of the casting chamber by an extractor wedge (22) mounted for pivoted movement about an axis parallel to the axis of the casting wheel. Nozzles (10) and (11) spray lubricant into the groove (2) to cool it and rotating brushes 14) engage the periphery of the casting wheel (1) to remove deposits of lubricant from the exterior of the wheel to prevent scale formation.

3,695,343

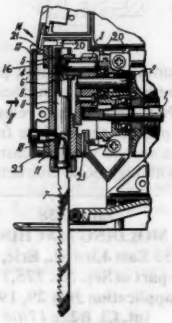
Patent Not Issued For This Number

3,695,344

HEAT INSULATION MEANS FOR POWER TOOLS

Albrecht Schnizler, Jr., Nuertingen, Germany, assignor to Metabowerke Kg Closs, Kauch & Schnizler, Nuertingen, Wuerttemberg, Germany

Filed Aug. 27, 1970, Ser. No. 67,410
Claims priority, application Germany, Sept. 3, 1969, G 69 34 527.3
Int. Cl. B27b *19/08*
U.S. Cl. 165—47 **5 Claims**



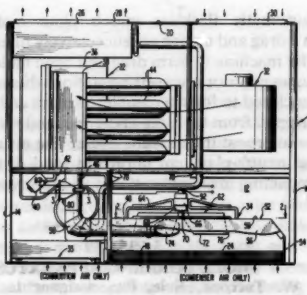
The invention relates to power tools, for example, a hand operated jig saw, having a housing of heat sensitive plastics material. A heat insulating layer of duroplastics is arranged intermediate the points of contact between said housing and members of the tool which are subject to heat-up during the operation of the tool, especially the bearing means such as a sleeve bearing.

3,695,345

CONTROLLED FORCED DRAFT ACTION TO THE FLUE OF A GAS FIRED HEAT EXCHANGER

Colby D. Moreland, Harrisonburg, Va., assignor to Dunham-Bush, Incorporated, Harrisonburg, Va.

Filed Oct. 7, 1970, Ser. No. 78,708
Int. Cl. F25g *29/00*
U.S. Cl. 165—64 **6 Claims**



The flue pipe leading from the combustion chamber of a gas fired heat exchanger has its discharge opening aligned with and conforming to the periphery the condenser fan for forcibly discharging the combustion products and maintaining

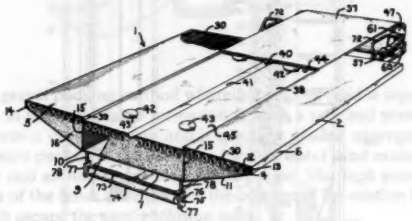
proper draft. A damper valve within the flue pipe, intermediate of the gas fired heat exchanger and the condenser fan insures proper maintenance of the vacuum pressure within the combustion chamber regardless of wind conditions acting on the combined heating and cooling unit.

3,695,346

TABLE AND/OR TABLE CONVEYOR STRUCTURE

William A. Nichols, c/o W. A. Nichols Co., 819 West 25th St., Kansas City, Mo.

Filed Aug. 11, 1970, Ser. No. 62,942
Int. Cl. F28g *5/00*
U.S. Cl. 165—120 **7 Claims**



A processing table particularly for food products wherein the table is a hollow shell of non-corrosive material with all of the wells connected to provide a substantially continuous surface with no openings or joints or crevices that can collect material. The elongate table structure is supported on spaced pedestals connected to the bottom, and there is a rigid synthetic foam substantially filling the shell to form a compression resisting structure. A conveyor belt operates over pulleys mounted at the ends of the table structure with one run movable longitudinally of the table top and the other run under the shell. One of the pulleys is supported in bearings and at one end of the table structure and driven from a motor and speed reducer, the other pulley being at the other end of the table and supported in bearings mounted on arms swingably mounted relative to the table whereby said pulley may be moved from a belt slack position to a belt tightened position, said swingable arms having adjustments for adjusting the tension of the belt. Key means is arranged relative to the table and swingable arms to hold the arms in belt tightened position. The table has lateral portions providing work surfaces at each side of the top run of the belt and said table has refrigeration coils under the table top for cooling the top and thereby retarding growth of bacteria. A belt washing apparatus is arranged at one of the pedestals for cleaning the belt with provisions at said pedestal for disposal of the wash liquid.

3,695,347

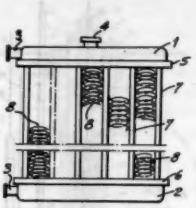
CORRUGATED DISSIPATOR FOR TUBE AND DISSIPATOR RADIATOR CORE AND PROCESS FOR MANUFACTURING THE SAME

Andre Chartet, Meudon, France, assignor to Societe Anonyme des Usines Chausson, Asnieres, France

Filed Dec. 1, 1970, Ser. No. 94,238
Claims priority, application France, Dec. 3, 1969, 6941714
Int. Cl. F28b *1/10*
U.S. Cl. 165—152 **7 Claims**

Corrugated dissipator for tube and dissipator radiator cores wherein said dissipator has continuous areas for support on adjacent tubes, folded straps connecting the continuous areas being alternately bent to be successively imbricated by each other.

Process for manufacturing corrugated dissipator for tube and dissipator core wherein parallel sets of slots are made lengthwise in a thin strip and delimit straps which are alterna-



tively and oppositely fold. The strips are corrugated at the level of continuous areas separating each set of straps and are advancing while being retained in the corrugated portion.

3,695,348

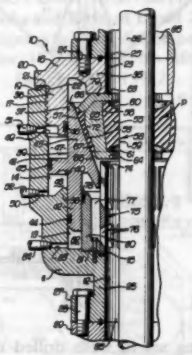
Patent Not Issued For This Number

3,695,349

WELL BLOWOUT PREVENTER CONTROL PRESSURE MODULATOR

Fernando Murman, Palos Verdes Peninsula; George E. Lewis, Arcadia, and Charles E. O'Brien, Whittier, all of Calif., assignors to Hydril Company, Los Angeles, Calif.

Filed March 19, 1970, Ser. No. 21,130
Int. Cl. E21b *33/035*
U.S. Cl. 166—.5 **37 Claims**



The constriction of a packer or other tool about a pipe string being run in a well is altered in such manner while a pipe joint is passing through the packer as to facilitate rapid running of the string in a well and to reduce wear of the packer.

3,695,350

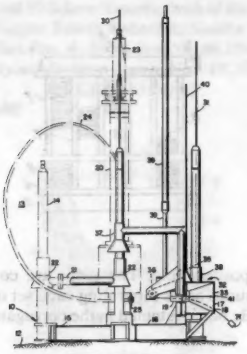
METHOD AND APPARATUS FOR CONNECTING FLOWLINES TO UNDERWATER WELLHEADS

William H. Petersen, Metairie, La., assignor to Shell Oil Company, New York, N.Y.

Filed July 29, 1970, Ser. No. 59,234
Int. Cl. E21b *43/00*
U.S. Cl. 166—.5 **8 Claims**

Apparatus and method for connecting flowlines to underwater wellheads by attaching a pulling head to the flowline and anchoring a pulling head fixture to the wellhead. A releasable pulling tool having a wireline in slidable engagement with the fixture on the wellhead is connected to the

flowline pulling head and the head is pulled into engagement with the fixture. When in proper position, the pulling tool is



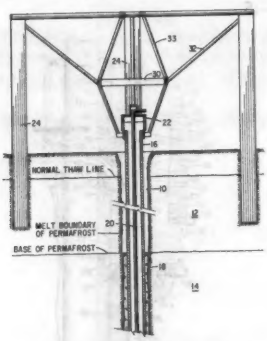
released and fluid communication may then be provided between the wellhead and the pulling head and thus with the flowline.

3,695,351

SUSPENDING CASING THROUGH PERMAFROST

Arthur Lubinski, Tulsa, Okla., assignor to Pan American Petroleum Corporation, Tulsa, Okla.

Filed June 3, 1970, Ser. No. 43,073
Int. Cl. E21b *33/03*
U.S. Cl. 166—96 **6 Claims**



Failure of casing set in wells drilled through permafrost zones can be anticipated if the casing is set in the usual manner. As the warm formation fluid is produced up through the permafrost zone, the permafrost adjacent the well thaws. In many instances the casing could be damaged by buckling when it loses its lateral support, while the upper termination of the casing moves downward due to subsidence. This problem is relieved by cementing the casing only below the permafrost zone and suspending the weight of the uncemented portion of the casing from a means at the surface which would not be affected subsidence-wise by the thawed region. A constant tension device can be used to adjust the tension on the casing.

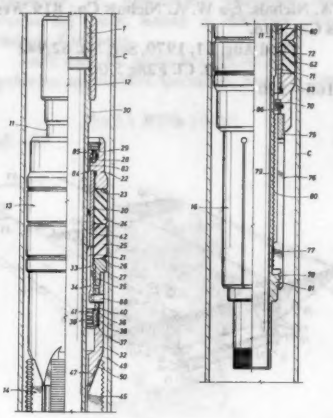
3,695,352

RETRIEVABLE WELL PACKER APPARATUS

Howard L. McGill, Houston, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed Sept. 21, 1970, Ser. No. 73,832
Int. Cl. E21b *23/06, 33/124*
U.S. Cl. 166—129 **16 Claims**

In accordance with an illustrative embodiment of the present invention, a retrievable well packer apparatus includes a body that carries upper and lower packing structures and an anchor for preventing movement in either longitudinal direction in a well bore. Each packing structure includes a settable packing element mounted on a pressure sleeve between a fixed abutment on the sleeve and a movable abutment slidable along the sleeve. A clutch means having cooperative parts on the sleeve and the movable abutment



functions to retain compression loading on the packing elements in the event of loss of packing material due to extrusion or the like. A one-way check valve system between each packing structure and the mandrel enables the pressure of fluids in the annulus space between the packing structures to equalize with the lesser pressure of fluids in the well bore above or below the packer apparatus, as the case may be.

3,695,353

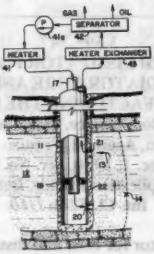
Patent Not Issued For This Number

3,695,354

HALOGENATING EXTRACTION OF OIL FROM OIL SHALE

Richard L. Dilgren, Houston, Tex., and Gary Drinkard, Houston, Tex., assignors to Shell Oil Company, New York, N.Y.

Filed March 30, 1970, Ser. No. 23,549
Int. Cl. E21b *43/24*; C10g *1/04*
U.S. Cl. 166—272 **5 Claims**



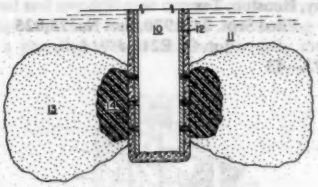
A process for recovering oil by circulating hot fluid through a permeable mass of oil shale is improved by circulating hot fluid that contains a halogenated organic compound.

3,695,355

GRAVEL PACK METHOD

Donald B. Wood, Houston, Tex., and Othar M. Kiel, Houston, Tex., assignors to Esso Production Research Company

Filed Jan. 16, 1970, Ser. No. 3,412
Int. Cl. E21b *43/04*
U.S. Cl. 166—295 5 Claims



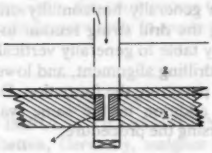
A gravel packing method wherein a viscous fluid is injected into an unconsolidated formation at such a rate and pressure to form a cavity therein and a specially graded aggregate is pressure packed in the cavity to form an outer sand exclusion zone and an inner high permeability zone. The high permeability of the inner zone permits the passage of for-mation fines which escape the sand exclusion zone.

3,695,356

PLUGGING OFF SOURCES OF WATER IN OIL RESERVOIRS

Perry A. Argabright, Sedalia, Colo.; C. Travis Presley, Littleton, Colo., and Harold C. Bixel, Denver, Colo., assignors to Marathon Oil Company, Findlay, Ohio

Filed Sept. 15, 1970, Ser. No. 72,288
Int. Cl. E21b *33/138*
U.S. Cl. 166—295 12 Claims



Water-oil ratio in production operations can be reduced by selectively plugging off sources of water within the formation by injecting solutions of chemicals which precipitate at a controlled rate, e.g., aqueous solutions of isocyanuric salts which hydrolyze.

3,695,357

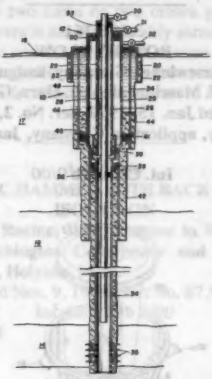
Patent Not Issued For This Number

3,695,358

WELL COMPLETION SYSTEMS

Elmo M. Blount, Irving, Tex., and Nicolas J. Prueger, Spenard, Alaska, assignors to Mobil Oil Corporation

Filed July 23, 1970, Ser. No. 57,636
Int. Cl. E21b *43/24, 43/10*
U.S. Cl. 166—302 12 Claims



Well completion system for wells penetrating a permafrost zone in the earth. The system comprises a protective casing and a production casing extending to a subterranean formation. The production casing is suspended from the protective casing at a downhole location in order to reduce loading at the wellhead. Also disclosed are means for supporting other tubular goods within the well rather than at the wellhead.

3,695,359

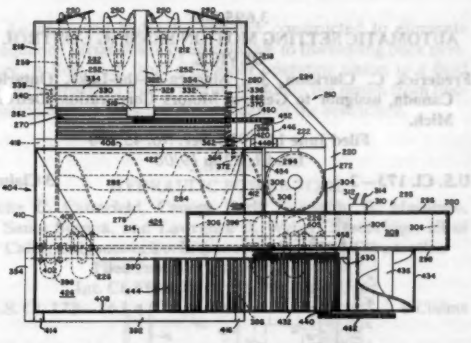
Patent Not Issued For This Number

3,695,360

ROOT CROP HARVESTER

Richard Wayne Hook, and Richard David Zaun, both of Des Moines, Iowa, assignors to Deere & Company, Moline, Ill.

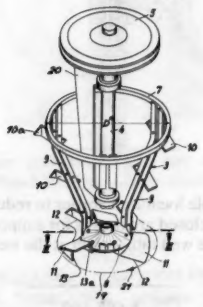
Filed Dec. 17, 1971, Ser. No. 209,123
Int. Cl. A01d *19/02*
U.S. Cl. 171—58 14 Claims



A root crop harvester includes a main frame, a plurality of digger wheels on the front of the main frame, conveyor means supported on the frame to receive roots from the digger wheels and deliver the same to a transversely extending auger conveyor which moves the roots to a vertical auger conveyor. An additional conveyor mounted on the upper end of the vertical auger conveyor in a root-receiving relationship therewith moves the roots laterally outwardly for deposit in a vehicle moving alongside the harvester or laterally inwardly. A tank attachment is securable to the main frame of the harvester in a position such that a portion of the tank extends under the inner end of the additional conveyor to receive roots deposited over the inner end of the additional conveyor. An unloader conveyor for the tank delivers the roots back to the

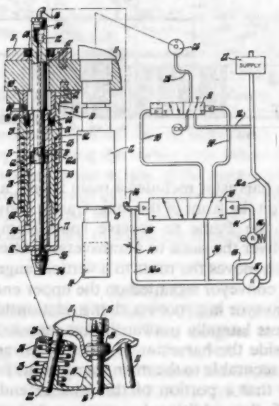
additional conveyor which will move the roots laterally outwardly for deposit into the vehicle moving alongside the harvester.

3,695,361
ROTARY PLOW
August Claas, Harsewinkel, Germany, assignor to Raussendorf & Co. G.m.b.H. Maschinenfabrik, Harz, Germany
Filed Jan. 15, 1970, Ser. No. 2,996
Claims priority, application Germany, Jan. 27, 1969, G 69 02 964.7
Int. Cl. A01b 9/00
U.S. Cl. 172—67 1 Claim



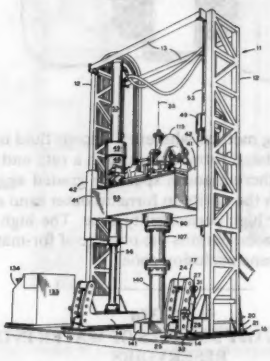
A rotary plow comprises a forwardly directed plowshare and a rotor adapted to ride behind the plowshare in the furrow formed thereby. This rotor consists of a large-diameter upper ring and a small-diameter lower disk with a plurality of tool-carrying struts extending therebetween, thus forming a downwardly converging body of revolution. Mounted on the lower disk are a plurality of angularly spaced outwardly extending blades having leading cutting edges. Each blade rises rearwardly from the cutting edge and has on its inner and outer edges downwardly extending flanges, the inner flange being formed with a lip releasably bolted to the disk.

3,695,362
AUTOMATIC SETTING MOTION-SENSING CONTROL DEVICE
Frederick C. Clarkson, Jr., Niagara-on-the-Lake, Ontario, Canada, assignor to General Motors Corporation, Detroit, Mich.
Filed June 11, 1970, Ser. No. 45,290
Int. Cl. B23p 19/06
U.S. Cl. 173—2 3 Claims



An automatic setting motion-sensing control device in the form of a sensing air valve which closes and sets its initial measurement point upon engagement with a workpiece and then opens upon a predetermined movement of the workpiece, relieving air pressure in the line. The resultant pressure drop is picked up by a pneumatic relay to stop the operation of a motion causing device operating on the workpiece.

3,695,363
ROTARY SHAFT DRILLING APPARATUS
Joseph L. Kelly, Jr., Houston, Tex., assignor to Hughes Tool Company, Houston, Tex.
Filed Sept. 24, 1970, Ser. No. 75,025
Int. Cl. E21b 19/14
U.S. Cl. 173—43 4 Claims



The apparatus has a frame and a carriage assembly. Hydraulic thrust cylinders are employed to raise and lower the carriage assembly relative to the frame. A rotary table supported by the carriage assembly moves up or down with the carriage assembly and can be pivoted about a generally horizontal axis, relative to the frame and carriage assembly.

The method is carried out by pivoting the rotary table into alignment with a generally horizontally oriented drill string section, coupling the drill string section to the rotary table, moving the rotary table to generally vertically orient the drill string section in drilling alignment, and lowering and rotating the drill string to penetrate the formation. Drill string sections are aligned for addition in the same way. Drill string is removed by reversing the procedure.

3,695,364
EARTH DRILLING MACHINE
Wilson B. Porter, Seattle, and Harold T. Klein, Bellevue, both of Wash., assignors to James S. Robbins and Associates, Inc., Seattle, Wash., a part interest
Filed Sept. 24, 1970, Ser. No. 75,020
Int. Cl. E21b 19/16
U.S. Cl. 173—57 9 Claims

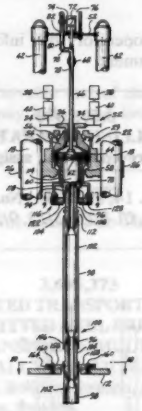
A traveling support frame is mounted for up and down travel by two parallel guide columns secured at their lower ends to a base frame. A portion of the traveling frame projects laterally of the drive columns and supports two drive motors, two reducing gearing assemblies, a collector gearing assembly and drive head means. The traveling frame and equipment carried thereby are moved up and down by triangularly arranged thrust ram means, each comprising a downwardly opening, upwardly projecting, piston chamber having a lower mounting portion originally secured to the traveling frame and a downwardly directed piston having a lower mounting portion secured to the base frame.

The drive head includes a breakout wrench having a plurality of laterally swinging wrench jaws moved in and out by linear fluid motors. The wrench jaws have radially inwardly directed wrench portions which are like spanner wrenches. The free

end of each wrench jaw makes abutting contact with a shank portion of the adjacent wrench jaw, so that in use the wrench jaws brace each other and form a compression ring surrounding the engaged drill pipe.

The drill head includes a tool joint component which is movable axially a limited amount relative to the traveling cross frame. A connector rod connects this tool joint component to the piston of a linear fluid motor supported axially above the drill head. Fluid is introduced into the motor below the piston for the purpose of counterbalancing the weight of the drill head and any drill pipe connected thereto.

A holding wrench is located below the turning wrench. It comprises a plurality of wrench jaws pivotally mounted for



lateral swinging movement, a surrounding control ring, and individual links interconnected between each wrench jaw and the control ring. The control ring is rotated by linear fluid motors. Rotation is one direction causes the links to move the wrench jaws radially inwardly into a position of engagement with holding wrench receiving portions on drill pipe, and movement in the opposite direction causes the links to move the wrench jaws radially outwardly in space relationship from the drill pipe.

3,695,365

TORQUE AND IMPULSE TRANSMITTING MACHINE

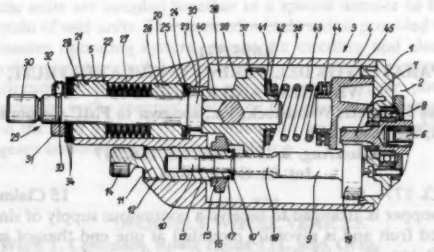
Fritz Schadlich, Stetten, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed Nov. 6, 1970, Ser. No. 87,492

Claims priority, application Germany, Nov. 14, 1969, P 19 57 288.4

Int. Cl. B25d *9/00*

U.S. Cl. 173—109 **15 Claims**



A torque and impulse transmitting machine with a built-in motor wherein the tool supporting spindle receives impulses from a rotary impeller gear which drives the spindle in response to rotation of the output shaft of the motor and is biased against a flange of the spindle by a strong helical spring. The impeller gear is moved axially rearwardly and away from the spindle during each revolution of the spindle by a shifting device which has two cams or two crown gears. One of the cams or crown gears is axially movably mounted in the housing of the machine and the other cam or crown gear forms part of a hub on the impeller gear. The latter strikes against the flange of the spindle whenever it is free to follow the bias of the helical spring.

3,695,366

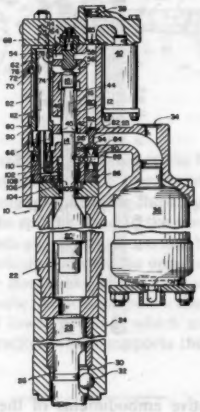
HYDRAULIC HAMMER WITH BACK PRESSURE ISOLATION

Ernst F. Klessig, Racine, Wis., assignor to Worthington Corporation (Worthington Compressor and Engine International Division), Holyoke, Mass.

Filed Nov. 9, 1970, Ser. No. 87,966

Int. Cl. E21b *1/00*

U.S. Cl. 173—134 **6 Claims**



An improved hydraulic hammer constructed to eliminate frequency variations in operation due to fluctuating back pressure. A flow path from a hammer operating piston to a fluid outlet is provided with a venturi to isolate the piston from fluctuation in back pressure downstream of the restriction.

3,695,367

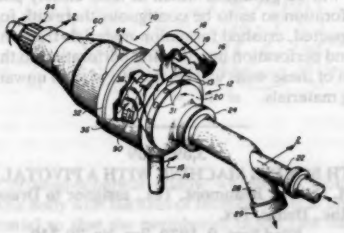
HYDRAULIC POWER TOOL

Fritz C. Catterfeld, Canoga Park; Sebastian B. Macaluso, Santa Susana, and Lawrence D. Weber, Northridge, all of Calif., assignors to North American Rockwell Corporation

Filed June 8, 1970, Ser. No. 44,447

Int. Cl. F01d *17/00, 15/06;* B23b *45/04*

U.S. Cl. 173—163 **8 Claims**



A hydraulically driven radial inflow turbine having power takeoff means attached thereto is actuated and controlled by

an axially translatable nozzle ring. A manually actuatable trigger mechanism admits a small amount of control fluid which is tapped from a primary source of liquid under pressure into a chamber defined by the nozzle ring and the turbine housing to move the nozzle ring in registering alignment with the primary liquid inlet apertures to the turbine impeller blades. The trigger assembly proportionately supplies hydraulic pressure to the turbine to control the flow of fluid to the turbine thereby controlling the power output.

3,695,368

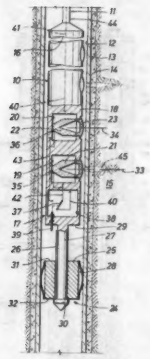
APPARATUS FOR PERFORATING EARTH FORMATIONS

C. P. Lanmon, II, Friendswood, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed April 7, 1971, Ser. No. 132,013

Int. Cl. E21b *43/116, 43/119*

U.S. Cl. 175—4.52 **14 Claims**



As representative embodiments of the present invention, each of the new and improved well tools disclosed herein include a perforator provided with one or more sets of longitudinally spaced, selectively fired perforating devices respectively directed along parallel or slightly convergent perforating axes. A wall-anchoring assembly is cooperatively arranged on the tool to permit longitudinal movement of the perforator in relation to the anchoring assembly over a distance which is slightly less than the longitudinal spacing between adjacent perforating devices. Upon positioning of the apparatus in a well bore, the first of two perforating devices in each set is actuated to produce a first perforation extending into the adjacent earth formations. By manipulating the suspension cable, the perforator is then shifted longitudinally in relation to the stationary anchoring assembly for locating the second perforating device in each set immediately adjacent to the previous position of the first perforating device. In this manner, upon actuation of the second perforating device, a second perforation will be produced which at least closely parallels the first perforation so as to be contiguous therewith for displacing compacted, crushed formation materials from the walls of the second perforation into the first perforation so that at least a portion of these walls will be cleared of such unwanted flow-blocking materials.

3,695,369

EARTH BORING MACHINE WITH A PIVOTAL HEAD

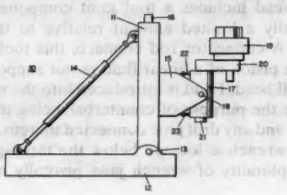
James M. Drouet, Beaumont, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Sept. 9, 1970, Ser. No. 70,740

Int. Cl. E21b *47/02;* **E21c** *23/00*

U.S. Cl. 175—45 **9 Claims**

The drill head of a raise drill is mounted to allow pivoting in one or more planes. Bending forces on the drill string and raise drill components are reduced, eliminated or controlled. An in-



dicator provides the operator with information concerning alignment and misalignment.

3,695,370

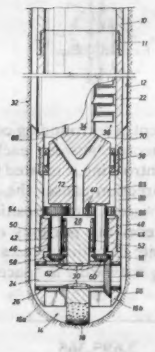
DRILLING APPARATUS

Kenneth W. Jones, Shreveport, La., assignor to Hycalog, Inc., Shreveport, La.

Filed Oct. 14, 1970, Ser. No. 80,633

Int. Cl. E21b *3/12, 9/36*

U.S. Cl. 175—106 **8 Claims**



A downhole fluid powered motor and a drill bit are connected to the lower end of the drill string. The outer housing of the motor and the body of the bit are connected together and to the drill string for rotation therewith. The drill bit includes a disc-shaped cutter wheel that is mounted on the drill body for rotation around a transverse axis that is perpendicular to the axis of rotation of the drill string. Power provided by the motor rotates the cutter wheel around the transverse axis when drilling mud is pumped down the drill string.

3,695,371

APPARATUS FOR DELIVERING SINGULATED FRUIT, WEIGHING AND BAGGING IT

Charles E. Sheetz, Woodstock, Va., assignor to FMC Corporation, San Jose, Calif.

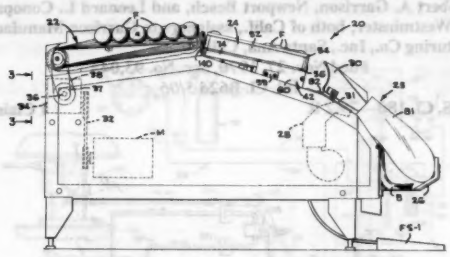
Filed Aug. 2, 1971, Ser. No. 168,247

Int. Cl. G01g *13/16*

U.S. Cl. 177—59 **15 Claims**

A hopper is arranged to receive a continuous supply of singulated fruit and is pivotally mounted at one end thereof so that it can be pivoted upwardly to discharge the contents thereof when a predetermined weight of fruit has been accumulated therein. The hopper is pivotally mounted upon a support structure which is, in turn, mounted upon one end of a scale beam. The other end of the scale beam mounts a device

which, when actuated, serves to engage the underside of the hopper to pivot it upwardly. Pivotable gate members are provided adjacent the movable end of the hopper to catch and hold a fruit which may follow the last fruit making up said predetermined weight of fruit.



3,695,372

Patent Not Issued For This Number

3,695,373

WHEEL-SUPPORTED TRANSPORT VEHICLE HAVING MAXIMUM PERMITTED AXEL PRESSURE AND BEING ADAPTED TO TRANSPORT SIMULTANEOUSLY LOADS OF THEORETICALLY UNLIMITED TOTAL WEIGHT

Karl-Johan Bostrom, Boliden, Sweden, assignor to Boliden Aktiebolag, Stockholm, Sweden

Filed March 23, 1970, Ser. No. 21,911

Claims priority, application Sweden, March 27, 1969, 4334/69

Int. Cl. B62d *59/04*

U.S. Cl. 180—14 A **13 Claims**

A wheel-supported transport vehicle which is capable of transporting loads of theoretically unlimited total weight. The vehicle comprises a manned vehicle unit, which embodies a master power unit and master gear transmission system, and a number of unmanned vehicle units, each having its own respective power unit and gear transmission system. The vehicle units are coupled together in a special manner to form a train of said units. The manned vehicle unit is provided with a master operating system, pneumatic circuitry and electrical relay system, which in combination with similar systems and circuits in the unmanned units cause the gear positions selected in the manned unit to be copied contemporaneously in the gear systems of the unmanned units and by which all gears are selected with the same force.

3,695,374

DIRIGIBLE WHEEL VEHICLE

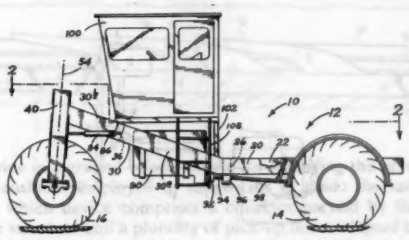
Ward T. Commons, Route 1, Box 111, Scio, Oreg.

Filed Aug. 7, 1970, Ser. No. 61,909

Int. Cl. B62d *61/08*

U.S. Cl. 180—27 **6 Claims**

A vehicle with a vehicle frame including a pair of substantially horizontal rear members extending longitudinally of the vehicle at its rear. The forward part of the vehicle frame is made up of a pair of elongated forward members joined to said rear members and projecting forwardly and inclining upwardly therefrom. The forward members have front portions which converge on each other progressing forwardly and upwardly in the vehicle thus to form a tongue. Rear wheels support the rear members of the frame, and a single dirigible wheel disposed under such tongue supports the forward part of the frame. The engine for powering the vehicle is mounted on said frame with such lodged between the forward members adjacent where they join with the rear members, and located rearwardly of the tongue. Journaling the dirigible wheel on the tongue, is an upright spindle fixed to the tongue and with the upper and lower ends projecting above and below the tongue. Stabilizing collars snugly embrace the upper and lower ends of the spindle and are also joined to the tongue, these being left unjoined to the spindle. Above and below these stabilizing collars are upper and lower bearings which are mounted on a wheel mounting bracket which supports the dirigible wheel.



3,695,375

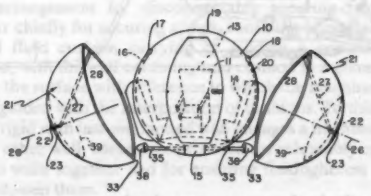
MULTI-PURPOSE VEHICLE

Thaddeus M. Splawinski, 10 Sullivan St., Saskatoon, Saskatchewan, Canada

Filed Nov. 30, 1970, Ser. No. 93,520

Int. Cl. B62d *61/00*

U.S. Cl. 180—29 **1 Claim**



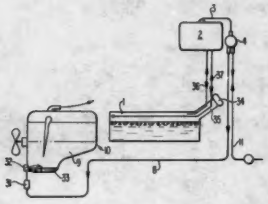
A pair of semi-spherical hollow wheels are mounted for rotation to a body with the axes of rotation being at an angle to the horizontal so that the peripheries of the two wheels are substantially together at the underside of the body. Power is transmitted from the body through an axle to each wheel, said axle carrying a friction roller engaging a circular track on the inside of each wheel.

3,695,376

SAFETY INSTALLATION FOR THE VENTING AND PRESSURE RELEASE OF CLOSED CONTAINERS

Horst Fiedler, Stuttgart-Fasanenhof, and Ludwig Fricker, Stuttgart-Feuerbach, both of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany

Filed Aug. 21, 1970, Ser. No. 65,997
Claims priority, application Germany, Aug. 23, 1969, P 19 42 963.1
Int. Cl. B60k *15/02*
U.S. Cl. 180—54 R 41 Claims



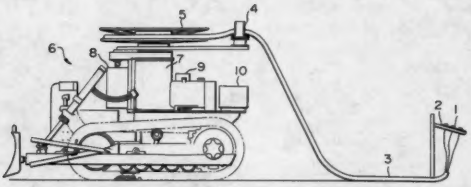
An installation for the venting and the pressure control of tanks preferably provided with an equalization container, especially of a fuel tank in motor vehicles provided with an equalization tank connected downstream thereof, in which the line coming from the equalization tank is provided with at least one venting valve and one pressure release valve of which the venting valve is connected by way of a vent line with the crankcase of the engine.

3,695,377

METHOD OF REMOTE CONTROL OF TRACTORS

Yoshiyuki Ito, and Toru Aihara, both of Sagamihara-shi, Japan, assignors to Caterpillar Mitsubishi Ltd., Tokyo, Japan

Filed Sept. 14, 1970, Ser. No. 71,877
Int. Cl. B60k *33/00*
U.S. Cl. 180—66 B 4 Claims



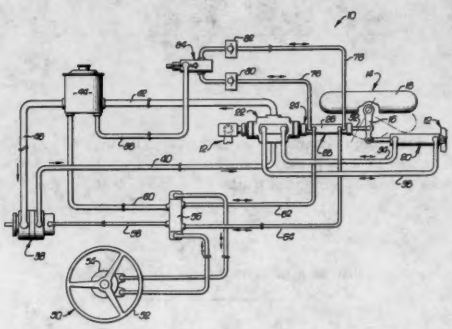
A method of remote control of tractors and similar earthmoving vehicles having an engine driven air compressor thereon, utilizes an umbilical control cable connected between the vehicle and the stationary control station and winds and unwinds the control cable on the vehicle as the machine moves relative to the stationary control station so that electrical signals sent through the control cable can operate relays and electro-pneumatic valves on the vehicle to route pneumatic pressure to actuating devices connected to the various controls of the vehicle.

3,695,378

CYLINDER FOR POWER STEERING SYSTEM WITH RELEASABLE HYDRAULIC STOPS

Robert A. Garrison, Newport Beach, and Leonard L. Conopa, Westminster, both of Calif., assignors to Garrison Manufacturing Co., Inc., Santa Ana, Calif.

Filed Nov. 27, 1970, Ser. No. 93,044
Int. Cl. B62d *5/06*
U.S. Cl. 180—79.2 R 1 Claim



A fluid operated power steering system having a control motor for actuating a steering valve which, in turn, actuates a fluid operated steering motor, the system including manually operable control means for delivering fluid under pressure from a pump to opposite ends of the control motor selectively. The control motor includes a control cylinder having axial cylindrical recesses at its ends, and includes a control piston having on opposite sides thereof complementary axial cylindrical plungers respectively insertable into the recesses so that fluid trapped in the recesses provides hydraulic stops for the control piston at the ends of its stroke. A relief valve discharges fluid from the recesses into a reservoir in the event excessive pressures are developed in the recesses due to external forces, such as the encountering of obstructions by the steerable wheels of the vehicle on which the system is installed. Under such conditions, the control system overrides the hydraulic stops and encounters mechanical stops at the ends of the control cylinder. With this construction, the hydraulic stops normally limit the travel of the control piston, but can be overcome if necessary to permit overtravel of the steerable wheels. Under such conditions, the hydraulic stops have a cushioning effect on the control piston and limit the severity of contact with the mechanical stops.

3,695,379

IGNITION SAFETY SWITCH SYSTEM

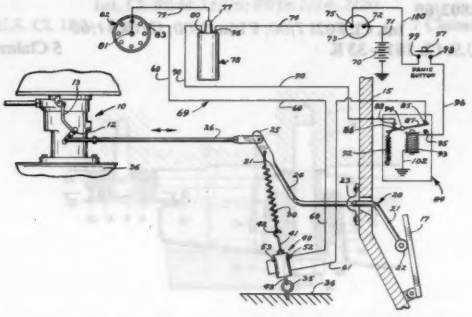
Bernard J. Veilleux, 9028 Highway 49 Rt. 1, St. Paul, Minn.

Filed Aug. 17, 1970, Ser. No. 64,326
Int. Cl. B60k *33/00*
U.S. Cl. 180—103 1 Claim

This invention relates to an automotive vehicle safety system comprising an ignition circuit breaker to be actuated in the event that the throttle of the vehicle becomes unexpectedly uncontrollable in opened position.

This system includes a pair of switches which involve the ignition circuit, said switches being normally in position as not to interrupt flow of current through the ignition circuit. One of said switches is actuated automatically to break the ignition circuit in the event of the breakage of the throttle lever spring

and the other of said switches is manually energized to de-energize said first mentioned switch and to break said ignition



circuit by action of the operator in the event the throttle lever is frozen resulting in unexpected loss of engine speed control.

3,695,380

Patent Not Issued For This Number

3,695,381

DOOR-LOCKING SYSTEM FOR VEHICLES

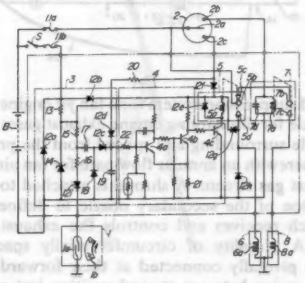
Masashi Okada, and Ichita Sogabe, both of Kariya, Japan, assignors to Nippondenso Co., Ltd., Kariya-shi, Aichi-ken, Japan

Filed June 16, 1971, Ser. No. 153,779

Claims priority, application Japan, July 24, 1970, 45/65217

Int. Cl. B60r *21/00*

U.S. Cl. 180—112 **1 Claim**



A system for locking vehicle doors in which energization of a locking cross valve and an unlocking cross valve is extended for a predetermined period of time by utilizing the charging and discharging of a capacitor even after a manual switch is opened, so that the cross valves continue to be energized for a longer period than the time by which the energization of the cross valves and servo systems may be delayed, thereby locking or unlocking the doors in a running vehicle without fail.

3,695,382

DEVICES FOR SUPPLYING THE PRESSURIZED FLUID CUSHIONS OF A GROUND-EFFECT VEHICLE

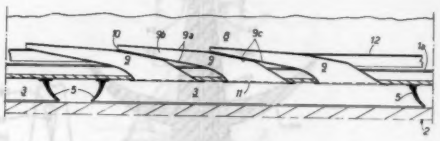
Henri Francois Marie Schmitt, Antony, and Claude Marande, Bois-D'Arcy, both of France, assignors to Societe de L'Aerotrain, Paris, France

Filed Sept. 25, 1970, Ser. No. 75,474

Claims priority, application France, Sept. 26, 1969, 6932898

Int. Cl. B61b *1/00, 1/06*

U.S. Cl. 180—116 **8 Claims**



A device in a ground-effect vehicle for supplying the pressurized cushions employed to support or to guide the said vehicle, which device comprises a collector carried by the machine structure and a plurality of pick-up ducts adapted to be fed with pressurized fluid from the collector and opening into the respective cushions, wherein the pick-up ducts are divergent towards their exits, over at least a part of their lengths, in order to improve transfer and distribution of pressurized fluid between the collector and the cushions.

3,695,383

ARRANGEMENT FOR SECURING WALLS TOGETHER

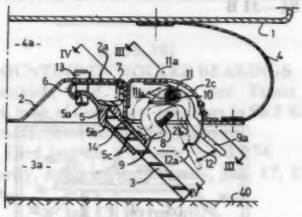
Serge Alfred Joseph Cruchant, Bagneux, France, assignor to Societe de L'Aerotrain, Paris, France

Filed April 8, 1970, Ser. No. 26,722

Claims priority, application France, April 10, 1969, 6911042

Int. Cl. B60v *1/16*

U.S. Cl. 180—127 **19 Claims**



Arrangement for securing walls together.

An arrangement for disconnectably securing two walls together chiefly for securing a wall, confining laterally a compressed fluid cushion carrying or guiding a ground effect machine, with the wall confining said cushion in a plane parallel with the surface with reference to which the machine is carried or guided with the interposition of cushions. To this end, a trough rigid with last-mentioned wall engages a member carrying the other wall. Means are provided for releasably securing the two walls together and for ensuring fluidtightness for the joint between them.

3,695,384

NON-MENISCUS FORMING ORIFICES

Marcel C. Schiess, 703 Quincy N.E., Albuquerque, N. Mex.

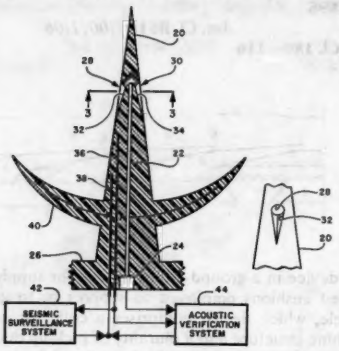
Filed Sept. 25, 1970, Ser. No. 75,384

Int. Cl. H01q *1/42*

U.S. Cl. 181—0.5 R **2 Claims**

Means for freeing an opening in a base member from blocking fluids which may normally form a meniscus over an

opening including a notch in the base member with a wide portion substantially tangent to the sides of said opening and with converging edges from said wide portion. The notch may include a V-shaped groove in the base member having a depth



decreasing from said wide portion with converging edges of sharp definition. The notch may be aligned with the converging edges in the direction of forces tending to clear the fluid from the opening.

3,695,385

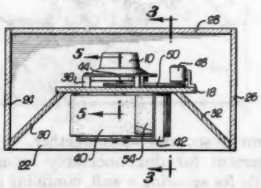
VARIABLE DISTANCE DOPPLER GENERATOR

Paul H. Sharp, Sierra Madre, Calif., assignor to Columbia Broadcasting System, Inc., New York, N.Y.

Filed May 26, 1971, Ser. No. 147,022

Int. Cl. G10k *13/00;* **H04r** *1/28*

U.S. Cl. 181—31 B **9 Claims**



A plurality of acoustic pulsato units are mounted in a vertical stack with the axes of the pulsato rotors horizontal in spaced parallel array. Reflector walls on opposite sides not only direct the sound frontally but also serve as the primary means for producing frequency deviations by Doppler effect since the distance between the reflector walls and the mouths of the sound channels changes in accordance with the angular movement of the rotors. Pulsato sound at a high energy level is efficiently radiated.

ERRATUM

For Class 181—33 see:
Patent No. 3,695,395

3,695,386

SOUND-PROOFING COMPONENT

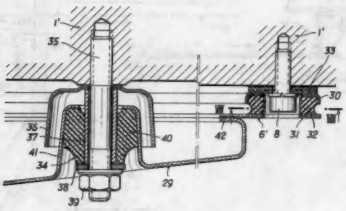
Gerhard Thien, and Heinz Fachbach, both of Graz, Austria, assignors to Hans List, Graz, Austria

Filed March 18, 1970, Ser. No. 20,758

Claims priority, application Austria, March 20, 1969, A 2802/69

Int. Cl. F02f *7/00;* **F16m** *1/00;* **G10k** *11/00*

U.S. Cl. 181—33 K **5 Claims**



A component for sound proofing internal combustion engines having two frame members attached to the surface of the engine and arranged in spaced relation to the engine and spaced from each other with sound proofing packing between the frame members.

3,695,387

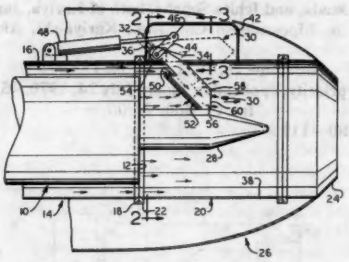
SOUND SUPPRESSION SYSTEM FOR FAN JET ENGINES

Jack H. Hilbig, Chula Vista, Calif., assignor to Rohr Corporation, Chula Vista, Calif.

Filed Sept. 8, 1970, Ser. No. 70,410

Int. Cl. B64d *33/06*

U.S. Cl. 181—33 HC **12 Claims**

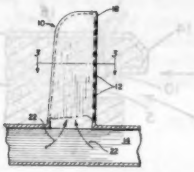


A sound suppression system for a fan jet engine having a primary nozzle for discharging engine exhaust gases and a secondary nozzle surrounding and spaced from the primary nozzle to form therewith an annular flow path for fan air surrounding the exhaust gas stream. A shroud is attached to and forms a continuation of the secondary nozzle to define a discharge zone which receives and controls the exhaust gas and air streams. A plurality of circumferentially spaced elongate ducts are pivotally connected at their forward ends to the shroud to swing between stowed position just outside of the shroud wall, to deployed position converging rearwardly with their aft ends substantially in contact with each other and with a coaxial bullet to partially block rearward flow of exhaust gas and to divert it radially outwardly into the air stream through divergent passages defined by the ducts. Each duct has a forwardly facing inlet port at its forward end and a rearwardly facing outlet port in its aft end. When deployed, fan air is ramfed into the former ports, flows through the ducts and is discharged into the exhaust gas stream from the latter ports. The result is a thorough intermixing of fan air and exhaust gas prior to leaving the shroud, thereby reducing temperature and velocity of the air-gas mixture and lowering jet noise.

3,695,388
QUIET JET DISCHARGE NOZZLE

Vincent B. Paxhia, Tonawanda, and Franklin B. Bossler, Williamsville, both of N.Y., assignors to Textron Inc., Providence, R.I.

Filed June 14, 1971, Ser. No. 152,696
Int. Cl. B64d *33/06*; F01n *1/14*, *7/20*
U.S. Cl. 181—33 F 7 Claims

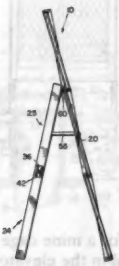


An improved air/gas jet nozzle of multiple orifice form is disclosed, the output of which is substantially inaudible to the human ear. The nozzle comprises an airfoil-shaped plenum having discharge orifices in its trailing edge. Sheaths of inaudible range vibrating air are induced to surround the discharge streams from the nozzle orifices and mask the audible range sound therein.

3,695,389
COLLAPSIBLE LADDER ASSEMBLY

Robert J. Forestal, and Jack W. Hanley, both of Indianapolis, Ind., assignors to Forestal Enterprises, Indianapolis, Ind.

Filed May 28, 1971, Ser. No. 148,031
Int. Cl. E06c *1/383*
U.S. Cl. 182—22 12 Claims

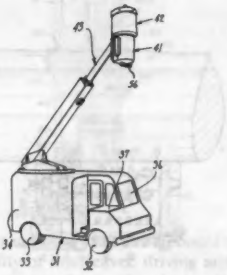


A collapsible ladder assembly having a ladder for use alternatively by itself or in combination with a carrying case in which said ladder is formed from a plurality of swingably interconnected scissored sections movable between a collapsed position in which they overlap each other and a fully extended position in which they are in a generally end to end relationship. The case is movable between a closed position for housing the collapsed ladder and an open position in which it can be connected to the fully extended ladder for supporting it in a generally upright position or disposed over the partially extended ladder to form an elevated platform therewith.

3,695,390
AERIAL LIFT WITH WORKMAN'S BASKET WITH PROTECTIVE COVERING

Bertram Jonathan Leigh, Redwood City, Calif., assignor to General Cable Corporation, New York, N.Y.

Filed Sept. 21, 1970, Ser. No. 74,028
Int. Cl. B66f *11/04*
U.S. Cl. 182—129 15 Claims

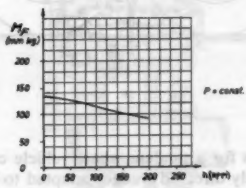


Aerial lift with workman's basket with protective covering having a boom structure, the outer end of which can be raised and lowered about a horizontal axis, rotated about a vertical axis and moved toward and away from the platform carrying the boom structure. A workman's basket having an upper open end is mounted adjacent the outer end of the boom structure. Support means is secured to the basket and includes an arm which is cantilevered over the upper end of the basket. A removable canopy is provided and means is provided for securing the canopy to the arm so that the canopy overlies and is spaced above the upper open end of the basket and means is provided for removably securing the canopy to the upper end of the basket for enclosing the space between the canopy and the upper end of the basket whereby workmen in the basket can be protected from the sun and inclement weather.

3,695,391
MOUNTING OF ROLLER BEARINGS

Hermann Munnich, Bad Kissingen, and Franz Markert, Schweinfurt, both of Germany, assignors to SKF Kugellagerfabriken GmbH, Schweinfurt, Germany

Filed Jan. 16, 1970, Ser. No. 3,274
Claims priority, application Germany, Jan. 17, 1969, P 19 02 254.9
Int. Cl. F01m *9/02*
U.S. Cl. 184—1 E 4 Claims



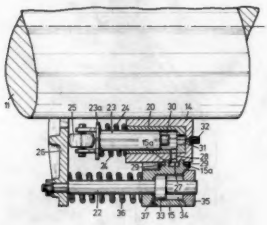
The use of a corrosion resistant oil comprising a major portion having a viscosity not exceeding 25 centistokes at 20° C to coat or lubricate the bearings of an axle pinion drive shaft permitting a more adequate and precise installation.

3,695,392

APPARATUS FOR LUBRICATING AREAS ON ROTATING PARTS

Erich Rosenthal, Hochdahl, Germany, assignor to G. Schwartz & Co., Dusseldorf, Germany

Filed Aug. 2, 1971, Ser. No. 168,282
Claims priority, application Germany, Aug. 5, 1970, P 20 38 918.8
Int. Cl. F16n *13/16*
U.S. Cl. 184—6.28 **8 Claims**



The specification discloses a device for lubricating areas of rotating parts in which a pump structure is carried by the rotating part. A stationary part surrounds the rotating part and forms a lubricating chamber connected to the pump. An actuating ring carried by the stationary part is operable for actuating the piston means of the pump structure. Conduit means lead from the pump structure to the area to be lubricated.

3,695,393

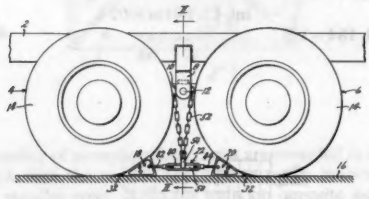
Patent Not Issued For This Number

3,695,394

LOCKING WHEEL CHOCKS FOR TANDEM WHEEL VEHICLES

Walter C. Carpenter, 14900 E. 40th St., Independence, Mo.

Filed Oct. 8, 1970, Ser. No. 79,169
Int. Cl. B60t *3/00*
U.S. Cl. 188—32 **1 Claim**



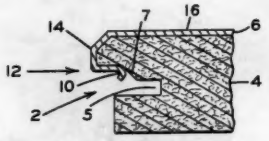
Wheel chocks for a tandem wheel vehicle consisting of a pair of oppositely directed wedges adapted to be positioned between a set of tandem wheels, each wedge being adapted to be driven between the road surface and one of said wheels, an adjustable turnbuckle extending between and interconnecting said wedges, and a chain and padlock operable both to secure said chocks to the vehicle and to prevent operation of said turnbuckle.

3,695,395

METAL-CLAD ACOUSTICAL CEILING TILE AND ITS MANUFACTURE

James C. Ollinger; Herbert Wolf, Jr., both of Lancaster, and Yves Latour, Chester County, all of Pa., assignors to Armstrong Cork Company, Lancaster, Pa.

Filed May 7, 1970, Ser. No. 35,491
Int. Cl. E04b *1/86*; E04c *2/38*
U.S. Cl. 181—33 G **1 Claim**



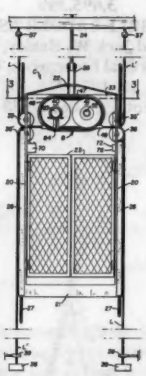
A ceiling tile is covered with a metal sheet. Around punch places acoustical openings in both the metal sheet and ceiling tile. The metal sheet is bent around the edge of the ceiling tile and tightly held thereto to fasten the metal sheet to the ceiling tile.

3,695,396

SAFETY BRAKE UNIT FOR A MINE CAGE

Robert Louis Jones, Wheat Ridge, Colo., assignor to Safety Lift Corp., Wheat Ridge, Colo.

Filed Oct. 29, 1970, Ser. No. 85,152
Int. Cl. B66b *5/16*
U.S. Cl. 187—89 **9 Claims**



A safety brake unit for a mine cage or similar elevator car. A safety line suspended in the elevator shaft extends through the safety brake unit mounted in the mine cage and several such units may be mounted in a single cage. The safety brake unit includes a pair of brake drums about which the safety line is wrapped. The brake drums have circumferential grooves to hold the wraps of the line and one drum is offset or tilted with respect to the other to permit the line to extend continuously about both drums. The brake drums are electrically actuated and switches are provided in the electrical circuits to close whenever the mine cage is released from its hoist or commences to drop too fast. Whenever several safety brake units are mounted in a single cage, the electrical actuating means will permit all of them to operate in unison. A mechanical fail-safe brake setting mechanism may also be included to set the brakes if the electrical system fails.

3,695,397

TORTUOUS GRIP ROPE BRAKE

Edwin L. Hobbs, 10 Lance Court, Contra Costa, Calif.

Filed May 28, 1971, Ser. No. 147,873
Int. Cl. B65h 59/14
U.S. Cl. 188—65.4 8 Claims

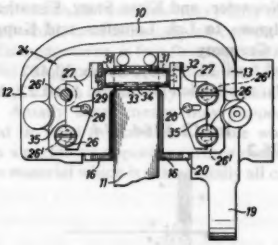
A device for use with an elongated flexible member consisting briefly of a frame having an opening adapted for connection to rings or other lines; a pair of enclosed openings one of which is openable, and side and cross members providing a plurality of friction surfaces for various line configurations to accomplish releasable engagement with a line and controllable descent on said line. A closeable gate means permits the device to be used as a hook and to prevent accidental loss of contact with a line. The device , in a modified form consists of a brake bar which provides automatic braking in descent modes and automatic holding in ascent applications.

3,695,398

BRAKE SHOE HOUSING AND RETAINER MEANS

Peter F. Crawford, Leamington Spa, England, assignor to Automotive Products Company Limited, Leamington Spa, England

Filed June 22, 1970, Ser. No. 48,173
Claims priority, application Great Britain, June 24, 1969, 31,863/69
Int. Cl. F16d 65/02
U.S. Cl. 188—73.6 6 Claims



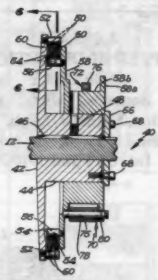
In a disc brake including pads simultaneously urged against opposite sides of a brake disc by applying means, the pads being carried by a channel-shaped housing which embraces the periphery of the brake disc, the brake pads are retained in the channel of said housing to prevent their rotation with the brake disc by end members which extend over the gaps between the side walls of the channel and the brake disc, one of said end members being retained in position by latch means so as to be readily detachable from the housing to allow removal and replacement of the brake pads.

3,695,399

OVERSPEED SAFETY BRAKE FOR ELEVATORS

Marvin R. Laing, 6009 Birchcrest Dr., Edina, Minn.

Filed Oct. 26, 1970, Ser. No. 83,703
Int. Cl. F16d 65/24
U.S. Cl. 188—187 5 Claims



A safety brake for use on a rotary component of an elevator comprising a plurality of interleaved driving and driven discs which frictionally coact to brake the elevator to a stop at a predetermined, maximum speed of said rotary component. The aforesaid discs are clamped between an annular braking plate connected to said rotaty component and a braking clamp, the driving discs being coupled to said braking plate for rotation therewith and the driven discs being coupled to the braking clamp, with the coupling means being so constructed and arranged that the driving and driven discs are not mechanically interconnected and may be shiftably adjusted with respect to each other to provide the desired braking pressure therebetween. The stopping of the braking clamp at predetermined rotational speed by speed responsive means causes the driven discs to stop and to bring the braking plate and rotary member to a stop by frictional drag action on the driving discs.

3,695,400

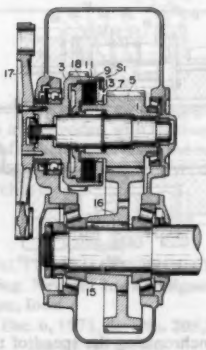
Patent Not Issued For This Number

3,695,401

REVERSE AND REDUCTION GEAR FOR SHIPS

Michisuke Nagasaki, Toyonaka, Japan, assignor to Yanmar Diesel Engine Co., Ltd., Osaka, Japan

Filed Nov. 16, 1970, Ser. No. 89,555
Claims priority, application Japan, July 22, 1968, 43/62580
Int. Cl. F16d 21/04; F16h 3/14
U.S. Cl. 192—21 2 Claims



A reverse and reduction gear for ships wherein three clutch units are arranged arcuately around a large gear mounted on a

thrust shaft, each clutch unit comprising an auxiliary shaft, loosely carrying driving and driven gears, and a clutch interposed between the two gears, and the driving gear of the center clutch unit is coupled to the input shaft and meshed with the driving gears of the clutch units on both sides, said driven gears of the three clutch units being meshed with the common large gear on the thrust shaft.

3,695,402

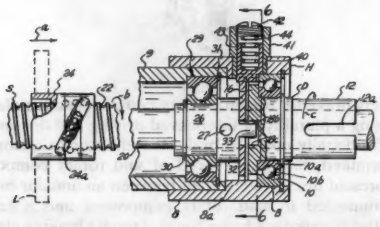
PLUNGER STOPPED BI-DIRECTIONAL NO-BACK ASSEMBLY

Edwin O. Klemm, Saginaw, Mich., assignor to Saginaw Products Corporation, Saginaw, Mich.

Filed June 11, 1970, Ser. No. 45,291

Int. Cl. F16d *67/00*

U.S. Cl. 192—8 R **17 Claims**



Apparatus comprising a rotatable output member, a rotatable drive member for rotating the output member in either direction, a releasable brake for substantially preventing rotation of the output member in either direction when it is not being driven by the drive member, and apparatus on the drive member is operable to release the brake upon a predetermined rotation of the drive member in either direction.

3,695,403

SYNCHRONIZING MECHANISMS FOR POWER TRANSMISSIONS

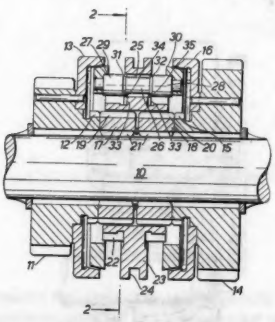
Thomas Eastwood, Meltham, England, assignor to David Brown Tractors Limited

Filed March 2, 1970, Ser. No. 15,579

Claims priority, application Great Britain, March 6, 1969, 11,914/69

Int. Cl. F16d *23/06*

U.S. Cl. 192—53 E **8 Claims**



A device for synchronizing the speed of two torque transmitting members of a vehicle gearbox has a cone clutch engagable by actuating pins which pass through clearance holes in an axially slidable clutching member. Each pin has a shoulder which balks axial movement of the clutching member when the axes of the pins are moved out of alignment with the axes of the holes in said member when torque is transmitted by the cone clutch. The clutching member carries springs which centralize the pins axially of said member to ensure movement of the pins in unison with said member and to reduce wear of the pins and the clearance holes.

3,695,404

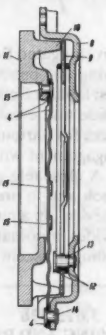
CLUTCH PLATE SUPPORTED BY STRESSED LEAF SPRINGS

Paul Maucher, Neuweier, and Klaus Steeg, Eisental, both of Germany, assignors to Luk Lamellen und Kupplungsbau GmbH, Buhl (Baden), Germany

Continuation of Ser. No. 736,726, June 13, 1968, abandoned. This application Aug. 5, 1970, Ser. No. 61,446

Int. Cl. F16d *13/70*

U.S. Cl. 192—70.18 **9 Claims**



The axially displaceable pressure plate of a friction clutch is connected with the clutch cover by transmission members consisting of longitudinally wavy leaf springs which are so fastened as to be pre-stressed not only in the axial direction of the clutch but also in their own longitudinal direction. Preferably three such leaf springs are mounted in a triangular arrangement, the middle of each spring being fastened to the pressure plate and the ends of each two adjacent leaf springs being jointly fastened to the cover of the clutch.

3,695,405

CLUTCH DISC

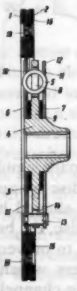
Paul Maucher, Neuweier, and Klaus Steeg, Eisenthal, both of Germany, assignors to Luk Lamellen und Kupplungsbau GmbH, Baden, Germany

Filed April 21, 1970, Ser. No. 30,482

Claims priority, application Germany, April 22, 1969, P 19 20 242.7

Int. Cl. F16d *3/14*

U.S. Cl. 192—106.2 **10 Claims**



Clutch disc includes a hub, an entrainer plate coaxially disposed and turnable relative to the hub, a pair of clutch fric-

tion linings mounted coaxially to one another and to the hub, a damping device located in a force transmission path between the entrainer plate and the hub, on the one hand, and between the pair of clutch friction linings, on the other hand, the damping device comprising force storing means operatively connected to the hub and to the entrainer plate, damping lining means disposed coaxially to the hub, a spring member in stressing engagement with the damping lining means so as to frictionally connect the same to the entrainer plate, the spring member being located in a space between the relatively turnable entrainer plate and the hub and being in the form of a disc abutting the damping lining means at one side thereof and the entrainer plate at the other side thereof, the pair of clutch friction linings being carried by the spring member.

3,695,406

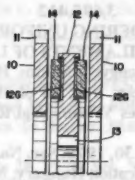
COUPLING WITH CARBON AND BERYLLIUM FRICTION SURFACES

Glenn R. Graham, Saddle River, N.J., and Robert W. Biggs, Chagrin Falls, Ohio, assignors to Abex Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 833,835, May 8, 1969, abandoned. This application Nov. 2, 1970, Ser. No. 86,060

Int. Cl. F16d *13/60*

U.S. Cl. 192—107 M **2 Claims**



A brake or clutch for extreme heavy duty may have a friction material which is substantially all carbon and which, for periods of disengagement, is free floating rotationally between a pair of solid or segmented metal members. Said metal members may each rotate, or one may rotate while the other does not rotate. Axially short means may support the friction material and be used to serve as a visible warning of wear. Beryllium is a preferred opposing surface material when used with friction material which is substantially all carbon.

3,695,407

FRICTIONAL TORQUE TRANSFERRING APPARATUS WITH A LIQUID MERCURY COOLING SYSTEM

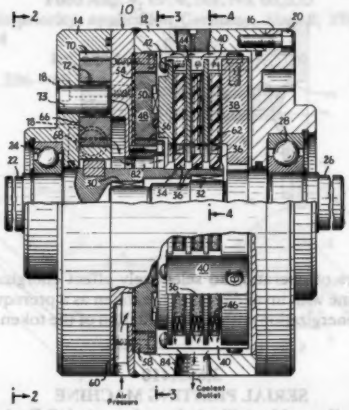
Walter E. Peery, Nelson Ridge Rd., Mercer County, N.J.

Filed April 23, 1970, Ser. No. 29,735

Int. Cl. F16d *13/72*

U.S. Cl. 192—113 B **7 Claims**

A slip clutch assembly includes a plurality of alternately spaced input and output plates adapted for frictional engagement. The input plates comprise teflon surfaces with low stick friction to slip friction ratios and have formed therein central apertures and radial passageways coupled between the apertures and the peripheries of the plates. Also included are input and output shafts operatively coupled to the input and output



clutch plates, respectively, and a gear pump for supplying a liquid mercury coolant centrally of the clutch assembly to the apertures formed in the input clutch plates.

3,695,408

CONVEYOR TRACK FOR ROLLING ARTICLES WITH SPACED CATCHES

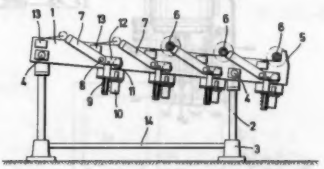
Jacksch Bruno, Wiesbaden, Germany, assignor to Firma W & M Automation Karl Muller, Wiesbaden, Germany

Filed March 25, 1970, Ser. No. 22,638

Claims priority, application Germany, Nov. 22, 1969, P 19 58 704.3

Int. Cl. B65g *11/20*

U.S. Cl. 193—40 **5 Claims**



The pivotal catches located along a conveyor track for rolling workpieces are provided with fluid-operated actuators under the control of switching valves at the respective stations to prevent the passage of a workpiece beyond each catch until the succeeding catch is clear.

3,695,409

TOKEN-ACTUATED CONTROL CIRCUIT

Quintin N. Rottering, Newton, Iowa, assignor to The Maytag Company, Newton, Iowa

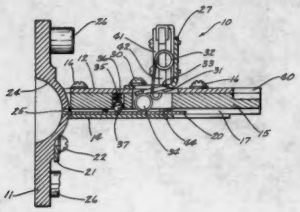
Filed Dec. 6, 1971, Ser. No. 205,238

Int. Cl. G07f *1/06*

U.S. Cl. 194—4 C **13 Claims**

A token-actuated control circuit operable for verifying authenticity of a token and initiating energization of a con-

trolled machine includes an SCR controlled by a neon tube and an R-C circuit. The control circuit is convertible between



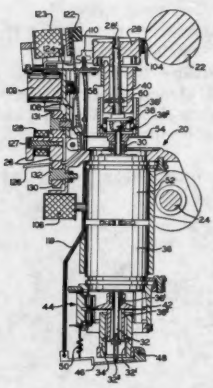
two modes of operation to selectively effect energization of the machine with invalidation of the token as a prerequisite or to effect energization without invalidation of the token.

3,695,410

SERIAL PRINTING MACHINE

Ludwig J. Kapp, Montville, N.J., assignor to I/Q Devices, Inc., Montville, N.J.

Filed Feb. 4, 1970, Ser. No. 8,617
Int. Cl. B41j *1/40*
U.S. Cl. 197—55 **1 Claim**



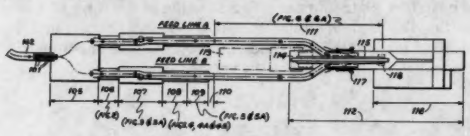
A serial printing machine having a platen and a print carriage, head assembly having a type wheel with a plurality of lines of type, means for moving the type wheel vertically with respect to the platen to select the desired line of type and means for moving the type wheel horizontally to select the desired character; a pair of endless ribbons which are selectable so that only one of them is in printing position between the type character and the platen at any particular instant; a holding coil positioned such that when current flows in the coil, the type hammer is held out of contact with the type wheel; a pair of rails of high magnetic permeability running laterally, essentially parallel to the platen, a plurality of series connected coils wound around high magnetic permeability supports between the rails such that when current flows through the coils, a magnetic field is established which stores potential energy in the type hammer assembly; when the current in the holding coil is turned off and the potential energy is released, the type hammer moves into percussive contact with the type wheel to thereby cause the selected character to be printed.

3,695,411

CONVEYING SYSTEM AND APPARATUS FOR FEEDING SOFT CAKE PRODUCTS

Hubert E. Tobey, Maywood; George O. Moller, Dumont, and Richard L. Twiford, Teaneck, all of N.J., assignors to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed Jan. 11, 1971, Ser. No. 105,446
Int. Cl. B65g *47/22*
U.S. Cl. 198—29 **8 Claims**



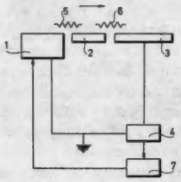
A conveying system and apparatus is disclosed for feeding soft cake products into a packaging machine for wrapping the products individually or in a twin pack. The conveying system includes a pair of feed lines which are coupled to receive the soft cake products and convey them to a packaging machine. Each of the feed lines includes an accumulating means for accumulating the received products in a first direction, a turn-around conveyor for turning the product from the first direction to the second direction, a turn-over conveyor means for orienting said product in the second direction, and means is coupled for providing a predetermined spacing between the oriented products. A turn-in conveyor in each line then feeds the products into a central feed line of a wrapping machine, and a means is provided to position the product prior to wrapping.

3,695,412

DEVICE FOR RENDERING UNIFORM THE FEED OF INCANDESCENT FILAMENTS OF LIGHT SOURCES

Imre Hollo; Sandor Lengyel; Miklos Hannauer, all of Budapest, and Bela Eross, Vac, all of Hungary, assignors to Egyesudt Izzolampa es Villamossagi/Reszvengtarsasag, Budapest, Hungary

Filed Nov. 30, 1970, Ser. No. 93,573
Claims priority, application Hungary, Nov. 28, 1969, 1753
Int. Cl. B65g *47/26*
U.S. Cl. 198—34 **10 Claims**



An arrangement for feeding successive coils of wire endwise in spaced relationship. The coils are successively fed by a vibration feeder over two longitudinally spaced electrically isolated guide sections which are connected in series with a power source, a relay, and with the motor of the vibration feeder. When two successive coils are so spaced as to overlie the vibration feeder and the first isolated path section, on the one hand, and the first and second isolated path section on the other, the vibration feeder is stopped for a predetermined period during which the first fed coil continues to travel under an effect other than that of the vibration feeder.

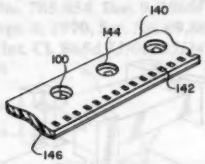
3,695,413

Patent Not Issued For This Number

3,695,414
DIE SORTING SYSTEM

Mordechai Wiesler, Lexington; Virgil Martinonis, Gloucester, and John S. MacIntyre, Lynnfield, all of Mass., assignors to Teledyne Incorporated, Woburn, Mass.

Filed Nov. 27, 1970, Ser. No. 92,973
Int. Cl. B65g 35/00
U.S. Cl. 198—108 2 Claims

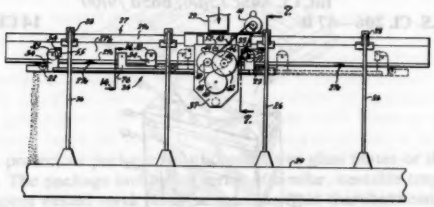


A wafer of semiconductor devices is tested to determine the quality of each device. The test data with respect to each die is electro-optically encoded and photographically recorded in a pattern corresponding to the die pattern on the wafer. Upon completion of the testing and recording operations the wafer is scored, mounted on a flexible pressure sensitive adhesive web and broken so as to separate the dies from one another while maintaining their original orientation. The dice and their respective test record are then mounted on a common frame, side by side, so that each die and its test data are readily matched. The frame is then mounted on a die sorting mechanism comprised of an XY indexing table which indexes through an electrooptical reader where the test data is read out to designate the die to a selected delivery station.

3,695,415
FEEDER FOR LIVESTOCK

Donavon L. Bakker, and Walter L. Miller, both of Fort Atkinson, Wis., assignors to Butler Manufacturing Company, Kansas City, Mo.

Filed July 28, 1970, Ser. No. 58,783
Int. Cl. A01k 5/02; B65g 21/12, 41/02
U.S. Cl. 198—110 4 Claims

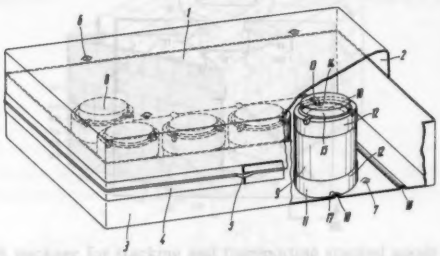


A feeder apparatus having an elongate, hooded supporting structure positioned above a feed trough. A reciprocally movable carriage of approximately one-half the length of the supporting structure is mounted thereon. A flexible conveyor belt is trained around belt guides on the carriage and the belt forms a loop about the carriage. The belt receives feed from a hopper and the feed is distributed along the trough in response to reciprocation of the carriage along the supporting structure and the accompanying shifting of the loop. In one form of the invention, the belt has permanently anchored portions. In another r form, an anchoring mechanism selectively grips portions of the conveyor belt to hold same stationary during certain phases of reciprocation of the carriage.

3,695,416
GAS MANTLE PACKAGES

Friedrich W. Klauer, Bachstelzenweg 15, 1 Berlin 33; Johannes Hugo Kroger, Helmstrasse 1, 1 Berlin 62, and Wilhelm Waldmann, Plamzelle 15, 1 Berlin 38, all of Germany

Filed Aug. 4, 1970, Ser. No. 60,835
Claims priority, application Germany, Aug. 8, 1969, G 69 31 960.4
Int. Cl. B65d 25/10, 25/54, 85/30
U.S. Cl. 206—45.14 3 Claims

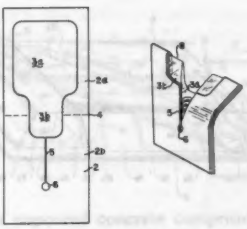


This invention relates to packages for gas mantles of the kind in which individual mantle holders are contained within an outer container. According to the invention, each holder is of the kind comprising a cylindrical sleeve member, a base and a lid and the sleeve member is non-transparent, while both the base and the lid are made from transparent, synthetic materials. The container in question has a lid that consists of a transparent, synthetic material and means are provided to ensure positive location of the individual holders in the container. The invention allows each individual gas mantle to be inspected through the transparent lid of the container to see that the mantles are intact.

3,695,417
PACKAGE WITH TRANSPARENT WINDOW

Carl B. Stoker, Jr., Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Aug. 17, 1970, Ser. No. 64,453
Int. Cl. B65d 25/00, 83/00
U.S. Cl. 206—45.31 4 Claims



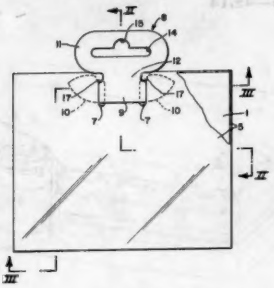
A package is formed by folding two halves of a stiff backing together with a plastic window therein. The window extends across the fold in the backing and is of narrow width in the first half of the backing and extends only a relatively short distance from the fold; in the second half of the backing the window is just as narrow at the fold and widens and extends most of the distance to the opposite edge of the backing. The first half of the backing comprises a slit which extends from the window, most of the distance to the other edge of the backing. The package is designed particularly for sterile objects, such as injection needles, tubing, etc.

3,695,418

SUSPENDED DISPLAY PACKAGE

Joseph W. Gwozdz, Clark Summit, Pa., assignor to McKinney Manufacturing Company, Scranton, Pa.

Filed June 4, 1971, Ser. No. 149,988
Int. Cl. B65d *65/16, 25/22*
U.S. Cl. 206—45.33 5 Claims



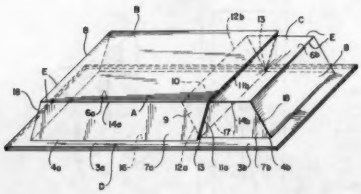
An open-front box containing an article for sale has a vertical back wall provided near its top with a central pair of laterally spaced vertical slots. The box is enclosed in a transparent plastic film. A vertically disposed hanger made from a flat resilient plastic sheet is provided with a lower portion having a central area engaging the back of the film between the slots. Tabs projecting laterally from opposite sides of this central area extend through slits in the film and the slots in the box to connect the hanger and box together. The hanger also has an upper portion extending above the box and provided with an opening for receiving a support for the hanger.

3,695,419

HINGED CONTAINER

Anton Packert, 39, Oberurseler Strasse, 6242 Schonberg/Taunus, and Werner Dietrich, 18, Utestrasse, Wiesbaden, both of Germany

Filed May 22, 1970, Ser. No. 39,784
Claims priority, application Germany, May 24, 1969, P 19 26 738.0
Int. Cl. B65d *25/00*
U.S. Cl. 206—45.34 7 Claims



This invention relates to a container having a filling cavity enclosed from all sides comprising a hood-like top portion open on one side and having outwardly projecting flanges surrounding it, a flat base portion secured to said flanges, the top portion comprising two hood sections extending in the same direction from the level of the flanges, each hood section having one end wall, two partial side walls, and a partial ceiling area with the open edges of the two hood sections facing in opposite directions and the open edges of pairs of partial side walls of the two hood sections which extend in the same plane having a common pivot point, and each pair of partial side walls extending in the same plane having an overlapping zone.

3,695,420

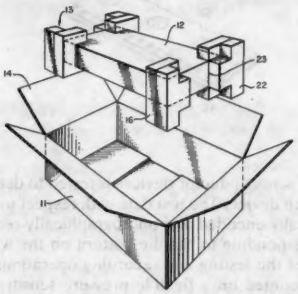
Patent Not Issued For This Number

3,695,421

PACKAGE ASSEMBLY AND CUSHION THEREFOR

Harry G. Wood, 849 Mesa Ave., Palo Alto, Calif.

Filed Sept. 8, 1970, Ser. No. 70,414
Int. Cl. B65d *81/04, 85/30*
U.S. Cl. 206—46 FC 7 Claims



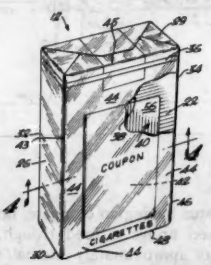
A package assembly for commodities comprising an outer container and a plurality of spaced elongated corner cushions formed of resilient energy absorbing material each having first and second portions of resilient material, a recess intermediate the ends for accomodating and holding the commodity in the container in spaced relationship to the top, bottom an sides of the container, and means including a bonding layer cooperating between said first and second portions for distributing forces between the two portions whereby to accommodate forces exerted by the commodity during handling and shipping.

3,695,422

PACKAGED ARTICLES WITH CARRIER INDICIA BEARING FOLDED STRIP

Peter R. Tripodi, Miami, Fla., assignor to Liggett & Myers Incorporated, New York, N.Y.

Filed April 15, 1970, Ser. No. 28,815
Int. Cl. A45c *15/00*; B65d *79/00*
U.S. Cl. 206—47 R 14 Claims



A packaged unit, such as a package of cigarettes, including a plurality of articles arranged in a parallel epipedal configuration and held together within a package which is encased in a transparent sealed wrapper. A strip of indicia bearing material folded into discrete segments of a size less than the main panel of the packaged unit is captivated in overlaying relation of the central zone of one of the display panels of the package in a dished cavity between the display panel and the transparent

wrapper being held in position by the converging surfaces of the display panel and wrapper.

3,695,423

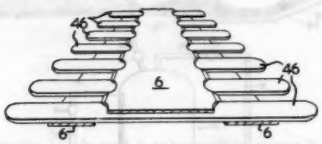
PACKAGE TAPE WITH STICKS RETAINED THEREON

Jean Paul Beaudoin, 22 Fernlea Crescent, Mount Royal, Quebec; Hiral Hogue, 7650 des Vendeen, Ville D'Anjou, Quebec, both of, and Jacques Larocque, deceased, late of 4921 Belleville, Pierrefonds, Quebec, Canada (by Patricia Powers Larocque, executrix)

Division of Ser. No. 785,854, Dec. 9, 1968. This application Sept. 4, 1970, Ser. No. 69,862

Int. Cl. B65d *73/00, 85/24*

U.S. Cl. 206—56 A 4 Claims



A tensioned tape having two corresponding series of circular pre-punched holes and a series of planar elongated articles each having a substantial width in relation to its thickness are provided. The plane of each elongated article is parallel to the axis of the tape so that the tape is flatened against the opposite faces of the articles.

3,695,424

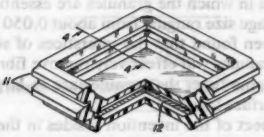
PACKAGE FOR FRAGILE ARTICLES

Albert B. Cristy, and Yuval Kachioff, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 28, 1970, Ser. No. 84,701

Int. Cl. B65d *1/34, 85/30*

U.S. Cl. 206—62 R 3 Claims



A protective package for photosensitive glass plates or the like. The package includes a series of similar, nestable trays, adjacent nested trays being adapted to hold therebetween a plate of the type described. Each tray bears a depending ridge and a raised ledge so positioned that the ridge of one tray and the ledge of a similar tray nested therewith cooperate in sealing engagement with the marginal areas of a plate sandwiched therebetween. Contaminant particles present at the plate edges are thus confined and prevented from reaching the central surface areas of the plate. Adjacent nested trays also cooperate to form a labyrinthine light lock to restrict the entry of light rays between the trays. The trays are retained in their nested relationship by frictional engagement.

3,695,425

Patent Not Issued For This Number

3,695,426

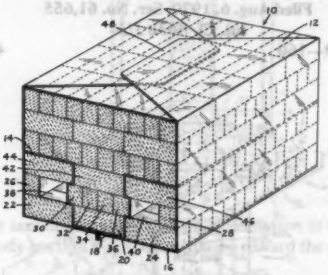
SHRINK-ON PACKAGE FOR STACKED GOODS

Herbert Engelsberger, Viersen, Germany, assignor to Feldmuhle Aktiengesellschaft, Dusseldorf-Oberkassel, Germany

Filed Oct. 6, 1970, Ser. No. 78,467

Int. Cl. B65d *71/00, 85/46, 85/62*

U.S. Cl. 206—65 S 15 Claims



A package for stacking and transporting stacked goods of regular shape without using pallets. The package comprises plastic sheet material which is heat-shrunk over at least four surfaces including the bottom of the stack. The package also includes one or more strips of supporting material extending into the bottom portion of the stack. The supporting strips together with the wrapping rigidify select lower portions of the stack to support its upper portions. In one embodiment, the inserted strip of supporting material covers a central portion of the bottom of the stack and defines one side of each of a pair of tunnels through the stack. In other embodiments two strips envelope the outer portions of three or more bottom layers of the stack, each of the strips additionally partially defining the sides of separate tunnels through the stack.

3,695,427

CLASSIFYING SEPARATOR FOR UNPOURED, FLOWABLE ROCK-GRAVEL, SAND AND CEMENT SLURRY MIXTURE FROM CONCRETE MIXER

Rheinhardt Friesz, 6113 Cherryhill, Houston, Tex.

Filed Jan. 8, 1970, Ser. No. 1,372

Int. Cl. B03b *7/00*

U.S. Cl. 209—44 7 Claims

A separator for unpoured concrete comprising a settling tank with an overflow weir on one side and a screw conveyor extending out of the other side. A washing spray is provided for the portion of the screw conveyor extending out of the settling tank and the main portion of the tank at the overflow end is separated from the upward extension of the conveyor by a screen for preventing the return of rock-gravel being conveyed upwardly into the main portion of the settling tank. The conveyor delivers sand and rock-gravel to a shaker screen for separating same.

3,695,428

Patent Not Issued For This Number

3,695,429

Patent Not Issued For This Number

3,695,430

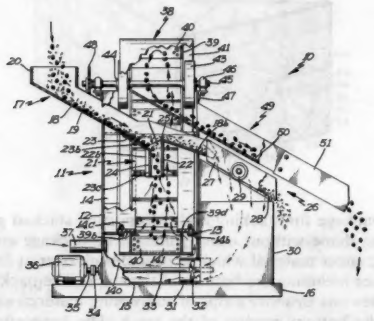
APPARATUS FOR CLEANING GRAVEL AND THE LIKE

Theodore F. Garland, Crosby, Minn., assignor to Garland Manufacturing Company, Crosby, Minn.

Filed Aug. 6, 1970, Ser. No. 61,655

Int. Cl. B03b *3/34*

U.S. Cl. 209—160 **4 Claims**



Apparatus for separating and removing lightweight deleterious material from gravel, ore and the like which comprises a tank having a revolvable, generally cylindrical dewatering wheel therein. The dewatering wheel has a plurality of lifting elements thereon which receives the heavier material, such as gravel, ore and the like, from an opening in an inclined chute which extends below the surface of the water. The chute has a discharge end located below the surface of the water through which water entrained lightweight material is discharged. A discharge chute receives the dewatered, separated heavier material from the dewatering wheel and conveys the same to the exterior.

3,695,431

Patent Not Issued For This Number

3,695,432

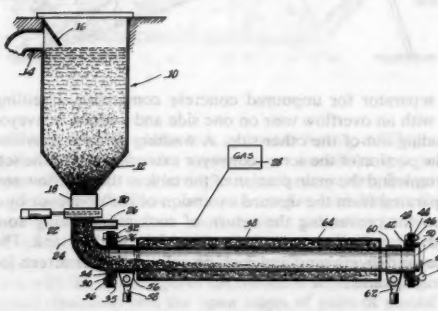
SEWERAGE DISPOSAL PROCESS AND APPARATUS

Edward J. McCrink, 75 E. Lake St., Northlake, Ill.

Filed May 25, 1970, Ser. No. 40,159

Int. Cl. C02c *1/00*

U.S. Cl. 210—67 **6 Claims**



Liquid and solid organic wastes are separated by a settling process. The solid waste materials, while still wet or damp, are pumped into a heating retort along with an exothermic atmosphere such as dissociated ammonia, methane, propane, etc., and are heated to a very high temperature by electric resistance heating. This reduces the solid material to a very small amount of powdery ash. Gases from the process are passed through a flame curtain to avoid all odors.

3,695,433

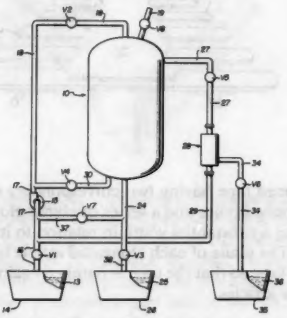
METHOD OF FILTERING A MIXTURE OF LIQUID AND FIBROUS SOLID CONTAMINANTS

Gene Hirs, Birmingham, and Richard H. Wykoff, Livonia, both of Mich., assignors to Hydromation Filter Company, Livonia, Mich.

Filed Sept. 28, 1970, Ser. No. 76,654The portion of the term of this patent subsequent to Dec. 29, 1987, has been disclaimed.

Int. Cl. B01d *29/38*

U.S. Cl. 210—67 **1 Claim**



This invention presents a filter and a method of filtration which is specifically adapted for the filtration of solid fibrous contaminants from a liquid, the contaminants having a low breadth-to-length ratio. The filtration of such fibers has long posed a problem due to the tendency of such fibers to surface load existing filter media.

One aspect of the invention resides in the utilization of a relatively large granular media, i.e., an organic polymeric granular media in which the granules are essentially spherical and of an average size ranging from about 0.050 inch to 0.375 inch. It has been found that the interstices of such relatively large media granules will effectively remove fibrous materials while, at the same time, the granules are so large as to resist appreciable surface loading.

Another aspect of the invention resides in the "backwash" procedures for removing accreted fiber contaminants from the granular filter bed. This procedure involves forming the organic polymeric granules into a slurry in the liquid being filtered, while violently agitating the slurry to wash entwined and matted fibers contaminants from the individual granules and separating the fibrous contaminants from the slurry together with a portion of the liquid being filtered.

3,695,434

METHOD OF WATER PURIFICATION

George R. Whitten, Jr., 2033 Mendon Road, Cumberland, R.I.

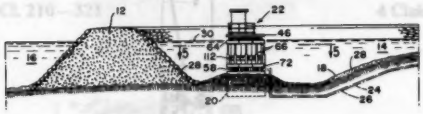
Division of Ser. No. 865,269, Oct. 10, 1969. This application Aug. 28, 1970, Ser. No. 67,998

Int. Cl. B01d *37/00*

U.S. Cl. 210—74 **8 Claims**

A method of purifying bodies of water in the preferred embodiment of which a reservoir of purified water is prepared from a natural body of water by constructing a prefiltering levee through the water to segregate the reservoir area from the remainder of the water body, pumping water from the reservoir area into the remainder, cleaning the floor of the

reservoir area if necessary, installing a water purification unit in the reservoir, and then allowing the water to filter through the levee from the remainder of the water body into the reservoir for continuous further purification and recirculation by the installed unit. The water purification unit includes a mixing chamber, a filtering chamber skimming means for intaking surface water into the mixing chamber, submerged inlets for intaking water into the mixing chamber from below the water'surface, a pump for passing water from the mixing chamber through the filtering chamber, and outlet means for passing the filtered water directly back to the reservoir. The preferred skimming means comprises a mobile skimming gutter to insure a constant intake of surface water at various



reservoir water levels and a submersible pump is preferably positioned in the mixing chamber to force the mixed water through one or more filter cells provided in the filtering chamber. The outlet means are preferably disposed to set up recirculation currents using the earth rotation effect, and means are also provided for backwashing the filter cells. To insure that the pump does not run dry, the submerged inlet flow is preferably float modulated to provide the full capacity of the pump if the skimmed flow is temporarily reduced. Various purifying chemicals may be added to the processed water in its passage through the unit, and in a modified form of the invention, a portion of the purified water is passed back to the remainder of the water body for progressive purification thereof.

3,695,435

Patent Not Issued For This Number

3,695,436

Patent Not Issued For This Number

3,695,437

OIL FILTER WITH IMPROVED ANTI-DRAINBACK VALVE

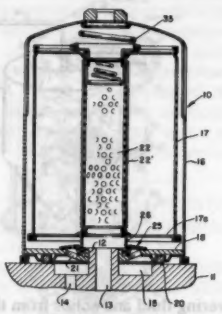
Robert J. Shaltis, Hastings, Mich., assignor to Hastings Manufacturing Company, Hastings, Mich.

Continuation-in-part of Ser. Nos. 36,971, May 13, 1970, and Ser. No. 39,741, May 22, 1970, abandoned. This application Jan. 11, 1971, Ser. No. 105,426

Int. Cl. B01d *35/14, 27/10*

U.S. Cl. 210—136 **7 Claims**

A combined cartridge seating and oil drainback preventing member is interposed between a filter cartridge and the end plate of a cartridge casing. The member is of elastomeric material and includes a thick inner annular edge portion in engagement with the end plate between oil inlet and oil outlet openings, and a thin outer annular body portion which overlies the inlet openings but is deflectable by pressure of incoming oil The thick inner annular edge portion of the member is formed with a wide flat annular seat for a tubular adapter on the cartridge which is frictionally received in the seat so that the member may be supported on the adapter as a unit prior to and during assembly of the cartridge in the casing. The



member is shaped so that upon its installation in the filter, its outer body portion is resiliently biased toward the end plate.

3,695,438

GASOLINE PRESSURE REGULATOR DEVICE

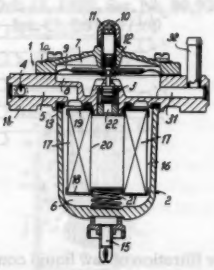
Alberto Malpassi, Via Montello 56, Seregno, Italy

Filed July 6, 1970, Ser. No. 52,627

Claims priority, application Italy, July 19, 1969, 9561 B/69; Feb. 14, 1970, 20863 B/70

Int. Cl. B01d *29/36*

U.S. Cl. 210—137 **1 Claim**



A petrol or gasoline pressure regulator device, particularly for motor vehicles, comprising a regulator body with two chambers separated by a diaphragm and a valve member controlling a communication duct to one of said chambers and acting on said diaphragm, the combinated effect of said valve member and of said diaphragm controlling the pressure of the petrol or gasoline inside said regulator body.

3,695,439

WASTE TREATMENT SYSTEMS

Herman K. Dupre, Seven Springs, Champion, Pa.

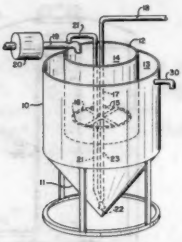
Filed Oct. 12, 1970, Ser. No. 79,746

Int. Cl. C02c *5/06*

U.S. Cl. 210—173 **6 Claims**

A sewage disposal apparatus is provided having an outer cylindrical tank on a vertical axis, a conical end closing the bottom of the cylindrical tank, an inner cylinder concentric with and within the outer tank, a source of oxygen containing gas under pressure, a gas diffuser means adjacent the bottom of the inner cylinder connected to said source of oxygen containing gas and discharging said gas within the inner cylinder, a sewage inlet line discharging into the inner cylinder with

comminuting means in the inlet line, and a pump means extending from the point adjacent the apex of the cone to the



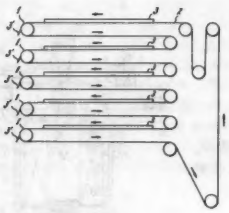
inlet line delivering fluid and solids from the cone apex to the inlet line and discharge means from the area between the outer cylindrical tank and the inner cylinder.

3,695,440

FILTER BELT WITH MEANS FORMING THEREWITH PLURAL PRESSURE FILTER CHAMBERS

Takao Mori, Nara, Japan, assignor to Inouye Kinzoku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Aug. 26, 1970, Ser. No. 67,026
Claims priority, application Japan, Aug. 30, 1969, 44/68824
Int. Cl. B01d *25/12*
U.S. Cl. 210—225 **5 Claims**



A method for filtration of raw liquid comprising the steps of supplying raw liquid under pressure into a filtration chamber formed between upper and lower filter cloths arranged in opposition to produce two filtrate flows passing through said upper and lower filter cloths in upper and lower directions, respectively, and then discharging the filtrate with cakes remained in said filtration chamber and the apparatus for carrying out the same method comprising a filter frame provided at its one side with a raw liquid supply opening, two filter plates each having a filtrate discharge hole and including a partition plate provided with a filtrate passage hole communicated with said filtrate discharge hole, said filter frame being interposed between said filter plates to form a filtration chamber, and a filter cloth arranged between the filter frame and the filter plates.

3,695,441

SELF-PROPELLED FLOATING DOCK AND SEPARATOR FILTER ASSEMBLY FOR TREATING POLLUTED WATER SURFACES AND NAUTICAL WORKS

Lucien Chastan-Bagnis, 21, Avenue Isola Bella, Cannes, France

Filed Aug. 10, 1970, Ser. No. 62,568
Int. Cl. C02b *9/02*
U.S. Cl. 210—242 **3 Claims**

There is provided a self-propelled enclosure for treating polluted water surfaces. It comprises two longitudinal caissons, a bottom floor and transverse partitions to connect the longitudinal caissons and to define the enclosure. A door is pivotally mounted at the front end of the floating enclosure and is downwardly foldable between a closed position of the enclosure, intermediate positions of the door and a fully opened position thereof in a plane which substantially coincides with the plane of the bottom floor. In this manner, the upper edge of the door can be at a predetermined depth under

the water surfaces to enable polluted water to enter the enclosure. A vault is formed in the bottom floor to define a channel underneath the bottom floor and a motor-operated helix is disposed at the rear end of the channel to suck water in the channel so that upon downwardly folding the door at a level lying immediately beneath a polluting layer, the self-propelled enclosure will be seen to advance over water to cause the polluting layer to slowly enter the enclosure until it fills the same.

3,695,442

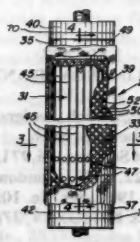
Patent Not Issued For This Number

3,695,443

FILTER APPARATUS

Henry Schmidt, Jr., Hinsdale, Ill., assignor to Industrial Filter & Pump Mfg. Co., Cicero, Ill.

Filed Aug. 20, 1970, Ser. No. 65,393
Int. Cl. B01d *27/00*
U.S. Cl. 210—315 **11 Claims**



A tubular filter element for use in a tube-type filter includes an externally-ribbed plastic core which is hollow throughout its length and which is surrounded by a coarsely-perforated plastic sleeve. The sleeve serves to space an outer finely-perforated cake-supporting tube from the core. A pair of plastic end members fit over and are heat welded to the core and the sleeve, the upper member being apertured. The core is apertured such that liquid passing through the outer tube and the

sleeve passes downwardly along the outer surface of the core and up through the hollow cavity in the core during a filtering operation and in the reverse direction during a cake removal operation.

3,695,444

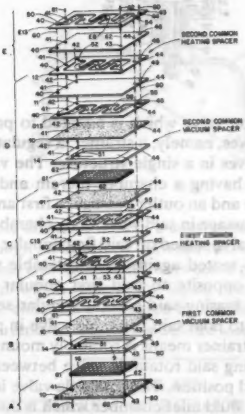
MEMBRANE SUPPORT

William B. Iaconelli, Scituate, Mass., assignor to Ionics, Incorporated, Watertown, Mass.

Division of Ser. No. 786,634, Dec. 24, 1968, Pat. No. 3,520,803. This application April 22, 1970, Ser. No. 30,661

Int. Cl. B01d *31/00*

U.S. Cl. 210—321 **4 Claims**



An apparatus for the separation of fluid mixtures having a plurality of three compartment subassemblies or units arranged in pairs, each subassembly consisting of a vapor, a heating, and a feed compartment defined from each other by separating barriers placed therebetween. The vapor compartment is placed common to a pair of subassemblies and contains therein a membrane barrier support structure, both sides of this structure placed in face to face contact with a semipermeable membrane; said vapor compartment associated with fluid inlet and outlet side ports which communicate with fluid conduits serving a pair of identical compartments located in subassemblies that are positioned on opposite sides of the common vapor compartments.

3,695,445

PLEATED MEMBRANE TRANSFER DEVICE

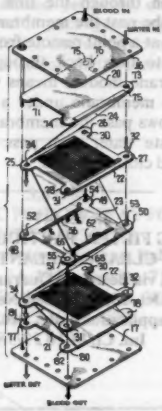
William G. Esmond, Baltimore, Md., assignor to Becton, Dickinson and Company, Rutherford, N.J.

Continuation-in-part of Ser. No. 818,970, April 24, 1969, Pat. No. 3,585,131. This application July 31, 1970, Ser. No. 59,906

Int. Cl. B01d *31/00*

U.S. Cl. 210—321 **10 Claims**

This disclosure relates to an exchange device employed in desalination, ultra filtration, in the transfer of heat, the transfer of gas from the gas phase to the liquid phase, or the transfer of gases from the gas phase to another gas phase or the opposite sides of a permeable or permselective membrane, or to the traNsfer of waste products from blood to a suitable rinsing fluid. The exchange device is formed of a plurality of flow sheets or plates which are disposed between intermediate



portions of a continuous pleated membrane. The flow plates have flow facilitating means formed therein and are reusable while the membrane is disposable.

3,695,446

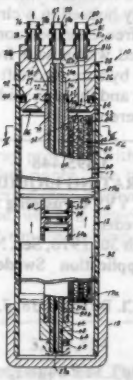
MEMBRANE MODULE ASSEMBLY

Charles E. Lyall, Deerfield, and Stanley F. Rak, Mundelein, both of Ill., assignors to Culligan International Company, Northbrook, Ill.

Filed Oct. 15, 1970, Ser. No. 80,926

Int. Cl. B01d *31/00*

U.S. Cl. 210—321 **7 Claims**



A reverse osmosis membrane module assembly that provides a high degree of adaptability to various locations and positions as well as economical manufacture and efficient maintenance comprises a closed receptacle having a detachable first end closure through which pass all plumbing connections to the interior chamber. Membrane module means are removably supported in the receptacle chamber on an inlet tube connected to the first end closure. The membrane module means may include one or a plurality of modules each comprising a body member having a hollow tubular member extending beyond both ends of the body member. The end portions of the tubular member have connection means thereon that allows quick and simple attachment of the modules to the closure means and to each other in series. A product water passageway that provides for the removal of

product water from the membrane module means is formed between the inside diameter of the membrane module tubular member and the outer diameter of the inlet tube. In operation feed water flows in through the first end closure means, through the inlet tube past the membrane in a first direction, enters the chamber at a point remote from the closure means, reverses direction to flow back through the chamber and through the membrane module means where product water passes through the membrane under a pressure differential and waste water flows past the membrane. Both the product water and the waste water then pass out of the chamber through the first end closure means.

3,695,447

SELF-CLEANING FILTER, PARTICULARLY FOR DRY-CLEANING PLANTS

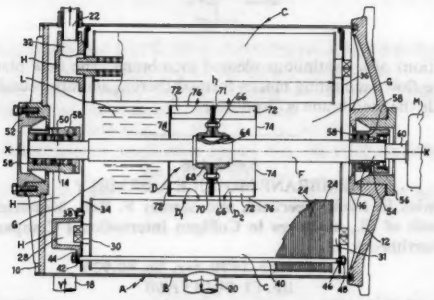
Gino Maestrelli, 55, via Bernardo Quaranta, Milan, Italy

Filed Oct. 13, 1970, Ser. No. 80,410

Claims priority, application Italy, Dec. 15, 1969, 25801-A/69

Int. Cl. B01d *29/38*

U.S. Cl. 210—332 **9 Claims**



A self-cleaning filter, particularly for dry-cleaning plants, comprising a liquid filled chamber wherein a plurality of filtering elements are radially housed in a circularly arranged pattern around a central free chamber zone. At least one centrifugal impeller is fitted within said free zone and suitably driven at time intervals by a motor shaft in order to cause the liquid be moved against and through said filtering elements for the cleaning purpose thereof.

3,695,448

DEVICE FOR SEPARATING LIQUID FROM A SLURRY

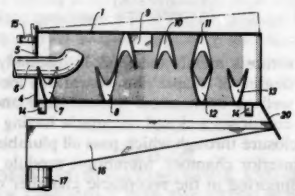
Rolf Ingvar Johansson, VVS Utrustning AB, Hjorthagsg. 10 D, 413 17 Goteborg, Sweden

Filed March 30, 1970, Ser. No. 23,553

Claims priority, application Sweden, April 24, 1969, 5832/69

Int. Cl. B01d *33/38, 33/06*

U.S. Cl. 210—394 **6 Claims**



A device for separating liquid from a slurry having a perforated rotatably driven drum into which the water slurry mixture is introduced and fed along the length thereof for dewatering the slurry and having a brush extending along said drum with bristles engaging said drum for being rotated thereby with the bristles engaging and cleaning the drum perforations of foreign material.

3,695,449

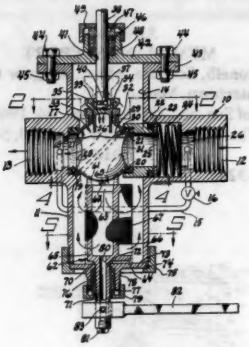
REGULATING STATION VALVE

Paul J. Scaglione, 30180 Richmond Hill Dr., Farmington, Mich.

Filed April 13, 1970, Ser. No. 27,734

Int. Cl. B01d *35/02*

U.S. Cl. 210—429 **21 Claims**



A regulating station valve which is adapted to provide the functions of four valves, namely, a strainer, a regulating valve, and two shut-off valves in a single structure. The valve comprises a valve body having a chamber therein and provided with an inlet passage and an outlet passage, a first annular seal around said outlet passage in said valve body chamber, rotatable ball or cylinder valve seated on said first annular seal and a second annular seal seated against said rotatable valve at a point diametrically opposite to said first annular seal, and means for normally biasing said second annular seal against said rotatable valve to hold said rotatable valve in position in said valve body. A strainer means is rotatably mounted in said valve body for turning said rotatable valve between an open position and a closed position. The rotatable valve is provided with a high pressure fluid inlet chamber which is divided from a low pressure fluid outlet chamber so that high pressure fluid flowing through said rotatable valve enters the inlet passage and passes through the inlet chamber in the rotatable valve and thence through the strainer and into the valve body chamber. The fluid then flows back into the outlet chamber in the rotatable valve and thence out of the rotatable valve and into said outlet passage. A regulating valve means is also provided to control the flow of fluid from the valve body chamber into the rotatable valve outlet chamber. The outer surfaces of the rotatable valve direct fluid flow and also function to allow flow or stop flow.

3,695,450

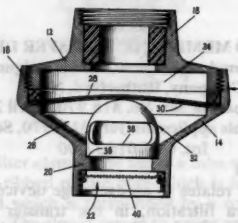
WATER TAP FILTER

Samuel Lieberman, 42 Oak Hill St., Newton, Mass.

Filed Nov. 18, 1971, Ser. No. 200,015

Int. Cl. B01d *29/00*

U.S. Cl. 210—449 **6 Claims**



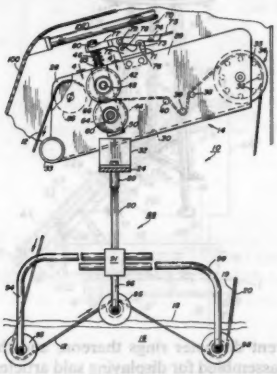
A filter-aerator for a water tap includes a specially formed internal static mixer which reduces the tendency of the water stream to splash when it strikes the sink.

3,695,451

SKIMMING DEVICE

Henry Schmidt, Jr., Hinsdale; Richard W. Crain, and James F. Zievers, both of La Grange, all of Ill., assignors to Industrial Filter & Pump Mfg. Co.

Filed Jan. 12, 1970, Ser. No. 2,125
Int. Cl. E02b *15/04*
U.S. Cl. 210—526 **4 Claims**



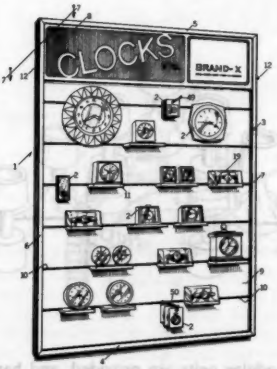
A portable skimmer utilizes a continuous flexible belt which passes through an interface between two liquids to adsorb one of the liquids and then passes between a pair of spring-loaded drive rollers which remove the liquid from the surface of the belt. These rollers are mounted in a collecting trough which directs the removed liquid to a desired location.

3,695,452

THEFT-DETERRENT MERCHANDISING DISPLAY APPARATUS

Albert A. Surman, 1534 Millard, Madison Heights, Mich.

Filed Sept. 17, 1970, Ser. No. 73,149
Int. Cl. E05b *73/00*
U.S. Cl. 211—4 **23 Claims**



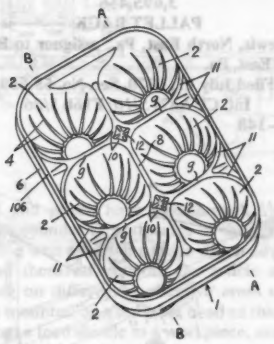
A theft-deterrent apparatus/system for displaying, merchandising and selling articles relative to a holding or "framelike" structure having a series of movable or slidable panels which retain the articles therebetween. Customers may readily view and/or handle the article but cannot remove it from the apparatus/system. A customer interested in purchasing or more closely examining (or inspecting) an article informs the salesman who can disengage or remove theft-deterrent (lock, key, handle or pull pin) stop(s) which permit the panels to freely move or slide apart thereby freeing the desired article. The articles may be displayed, in an exposed and/or enclosed condition in various affixed packages, on hooks, clips and shelves and/or displayed in packages comprising a shelf base with a transparent (pivotal and/or removable) cover affixed thereto as suits the particular theft-deterrent merchandising requirement/need.

3,695,453

FOAMED PLASTIC POCKET TRAY FOR FRUITS OR LIKE ARTICLES

Nerio Martelli, 6, via Cavaioni, Bologna, Italy

Filed Sept. 14, 1970, Ser. No. 71,921
Claims priority, application Italy, Sept. 30, 1969, 7344 A/69
Int. Cl. A47f *7/00*
U.S. Cl. 211—14 **8 Claims**



A foamed plastic tray provided with pockets separated at their tops by reinforcing ridges. The tray is provided with a large, upwardly projecting circumferential rim, of a substantially rectangular shape, which is externally flat so as to provide on its sides a flat rim for holding the tray in an upright position.

3,695,454

Patent Not Issued For This Number

3,695,455

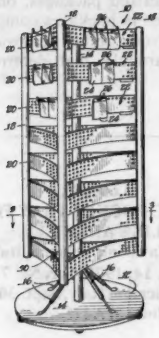
DISPLAY STAND

Charles O. Larson, Sterling, Ill., assignor to Chas. O. Larson Co., Sterling, Ill.

Filed Sept. 23, 1970, Ser. No. 74,767
Int. Cl. A47g *29/00*
U.S. Cl. 211—78 **10 Claims**

The present invention relates generally to display stands for articles to be sold, and more particularly to display stands upon which articles for sale may be mounted in vertically spaced relation. An embodiment of the invention disclosed herein comprises central post means having vertical frame members spaced laterally from and equally distributed about

the axis of the post means. Article display panel members extend between adjacent frame members, providing panel sections vertically spaced, so as to assure clear visibility through the stand from one side thereof to the other when articles for display are mounted thereon.



3,695,456

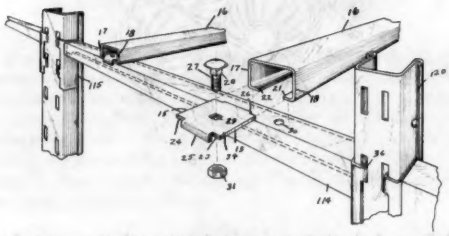
PALLET RACK

William L. Lewis, North East, Pa., assignor to Bernard Gloekler, North East, Pa.

Filed July 17, 1970, Ser. No. 55,659

Int. Cl. A47f 5/10; F16b 5/06

U.S. Cl. 211—148 **2 Claims**



A rack for storing pallets or the like. The rack is made up of vertical columns, lateral and cantilevered structural members fixed to the vertical columns, and longitudinal rails supported on the structural members. These rails, in the preferred embodiment of the invention, are in the form of channels having their lower edges turned inward. The rails are connected to the lateral or cantilevered structural members by joints which include a clamp plate. The clamp plate has a square body which fits between the legs of the channel and the square body has two flanges, one flange at each of two opposite sides of the body. The body is received in the channel overlying the inturned edges. The flanges of the clip cradle, the top part of the transverse structural members and a bolt extends through the clip and through the structural members. Thus, the clip holds the rails rigidly to the lateral or cantilevered structural members and holds the entire assembly in rigid relation.

3,695,457

DISPLAY RACK WITH ANNULAR MOUNTING RING

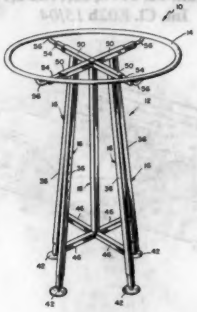
Maurice Cohen, 3580 N.W. 52nd St., Miami, Fla.

Continuation of Ser. No. 633,045, April 29, 1967, abandoned. This application June 15, 1970, Ser. No. 48,874

Int. Cl. A47f 5/10

U.S. Cl. 211—177 **8 Claims**

A rack for displaying articles thereon wherein a plurality of leg units are removably interconnected and an annular ring is removably mounted on adjustable arms of said leg units at the upper ends thereof, the adjustable arms providing for mounting of different diameter rings thereon, and the entire rack being easily assembled for displaying said articles or disassembled for packaging and shipping in a knocked-down position.



3,695,458

MODULAR CANDELABRUM

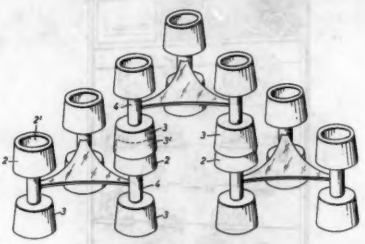
Hans Nagel, Dreilindenstrasse 1, Wesseling, Germany

Continuation of Ser. No. 861,223, Sept. 16, 1969, abandoned, which is a continuation of Ser. No. 653,525, July 14, 1967, abandoned. This application Aug. 20, 1970, Ser. No. 65,655

Claims priority, application Germany, Aug. 25, 1966, N 19 089

Int. Cl. A47f 5/10

U.S. Cl. 211—177 **8 Claims**



Identical modular units are provided, and having at least three upright transversely spaced rigidly connected legs. The upper ends of the legs are provided with a socket and lower end portions mate with these sockets. The units can be assembled in tiers with each higher unit having an end portion of at least one of its legs received in a socket of a lower unit, the end portions of two of the legs received in sockets of one or two of the lower units, or with the end portions of all of its legs received in the sockets of one lower unit, in sockets of two lower units, or in sockets of three lower units.

3,695,459

HANDLING DEVICE

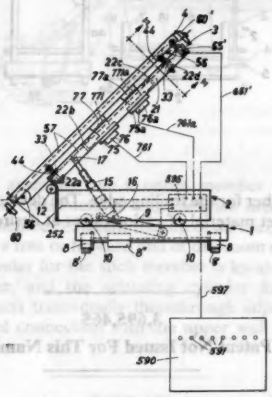
Andre Raes, Brussels, Belgium, assignor to S. A. Glaverbel, Watermael-Boitsfort, Belgium

Filed June 17, 1970, Ser. No. 46,990

Claims priority, application Luxembourg, June 17, 1969, 58,894

Int. Cl. B65g 7/00

U.S. Cl. 214—1 Q 20 Claims



An article supporting surface, such as for handling sheets of glass provides an air cushion for supporting the sheets and suction for holding sheets against the surface. The surface is articulated and tilts and is mounted on tracks so that the sheets may be handled and moved.

3,695,460

ELECTROMECHANICAL APPARATUS FOR SLINGING AND TURNING OVER ROLL MATERIAL

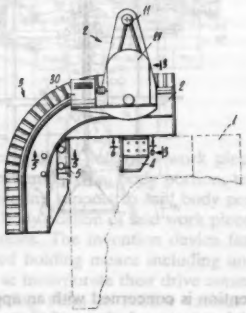
Aleardo Borriello, Via Tortona, 76, Milan, Italy

Filed Oct. 6, 1970, Ser. No. 78,430

Claims priority, application Italy, Oct. 7, 1969, 23024 A/69

Int. Cl. B65g 7/00

U.S. Cl. 214—1 QD 9 Claims



An electromechanical apparatus for turning over roll material, substantially comprising two parts movable with respect to each other and particularly a first drive part adapted to be hung to the hook of a lifting means and carrying a drive motor and a reducing unit, and a second part comprising a boxed L-beam having its legs interconnected by a circle arc section; at said connection, one leg of said L-beam carrying a fixed jaw cooperating with a jaw movable on guides along said leg to grasp a material roll to be lifted and turned over. Said L-beam has longitudinal sliding guides on the first part as well as racks meshing with suitable pinions driven by said reducing unit for longitudinally sliding with respect to said first driving part.

3,695,461

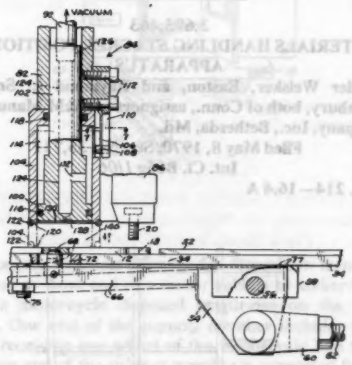
VACUUM-ACTUATED TRANSFER DEVICE AND ASSEMBLY APPARATUS

Gary D. Ginther, Leonard, Mich., assignor to Clyde Corporation, Troy, Mich.

Filed Oct. 14, 1970, Ser. No. 80,701

Int. Cl. B66c 1/02

U.S. Cl. 214—1 BT 14 Claims



Piston rod and piston have passageways for introducing vacuum into a cylinder at both sides of the piston. Cylinder has an open end with a sealing surface which advances against an article and then retracts with the article as a result of vacuum acting on differential effective areas of the piston. The device is mounted on a movable head so that it transports the article from a feed shuttle to a workpiece, and tools on the head secure the article to the workpiece.

3,695,462

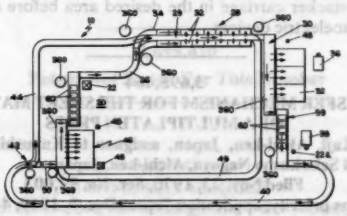
BAGGAGE HANDLING SYSTEM

Norman M. Sullivan, Grand Rapids, Mich., assignor to Rapistan Incorporated, Grand Rapids, Mich.

Filed Aug. 28, 1970, Ser. No. 67,738

Int. Cl. B65g 43/00

U.S. Cl. 214—16 B 34 Claims



A baggage handling system utilizing four-sided open top containers each carrying only one owner's set of baggage from the check-in to the enplaning dispensing station, and from the deplaning loading station to a baggage claim area. The system contemplates, in one form, that delivery of the baggage to the

baggage claim area will occur only at the initiation of the baggage owner. A coded signal comprising a baggage identification number or in the case of a dispensing station, a flight number, is fed to a computer which compares the information in the signal with the contents of the container, pulls the appropriate container out of the container system, and causes it to discharge at the point where the coded signal was generated. The containers are located by the computer by means of a memory system which has been supplied the identity of each individual container and which at all times can determine the precise location of each individual container in the system. When the system is used for returning baggage to its claimant, the claimant provides a reader at the baggage claim station with a code identifying his particular baggage which enables the computer to direct the container having his baggage to the claimant and to discharge it to him.

3,695,463

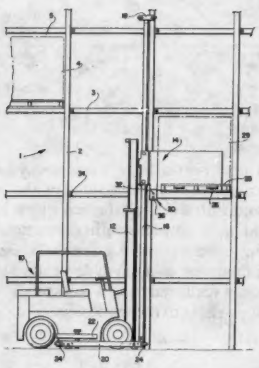
MATERIALS HANDLING STACKER POSITIONING APPARATUS

Alexander Weisker, Easton, and Raymond L. Smith, Jr., Southbury, both of Conn., assignors to C&M Manufacturing Company, Inc., Bethesda, Md.

Filed May 8, 1970, Ser. No. 35,711

Int. Cl. B65g *1/06*

U.S. Cl. 214—16.4 A **6 Claims**



Stacker attachments have upper and lower photoelectric devices for precisely positioning a carrier opposite a desired storage rack location. The lower photoelectric device is activated when a storage sequence of the stacker is intended. The upper photoelectric device is energized when a load retrieval sequence is intended. An operator generally positions a stacker carriage in the desired area before activating the photoelectric devices.

3,695,464

TRANSFER MECHANISM FOR THE SHEET MATERIAL OF A MULTIPLATEN PRESS

Seiho Kaji, Aichi-ken, Japan, assignor to Kabushiki Kaisha Meiki Seisakusho Nagoya, Aichi-ken, Japan

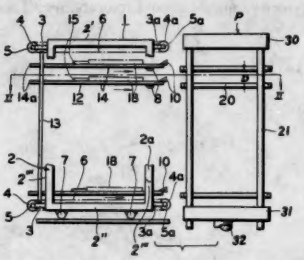
Filed Nov. 23, 1970, Ser. No. 92,003

Claims priority, application Japan, Dec. 9, 1969, 44/99203

Int. Cl. B65g *47/82*

U.S. Cl. 214—16.6 **8 Claims**

A transfer system for the sheets to be fed to and discharged from a multiplaten press which includes, at each press level, a support which may be disposed at a predetermined position corresponding to the trailing edge of sheet material in the press, detent means on the support, depressable by sheet material to be fed to the press on transfer trays, and abutment means for advancing the sheet material into the press over the detent means and finally into engagement therewith as a positioning member for the trailing edge. The device is thus able to position sheet material of various sizes at desired locations of the press.



3,695,465

Patent Not Issued For This Number

3,695,466

CHARGING APPARATUS FOR THE FURNACE

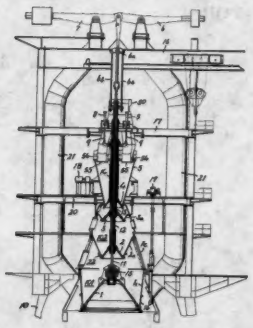
Tsunenori Sugawara; Teiji Shibuya; Satoru Miyakado, and Jiro Mase, all of Fukuyama, Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Filed May 8, 1970, Ser. No. 35,775

Claims priority, application Japan, May 9, 1969, 44/35587; May 9, 1969, 44/035588; May 9, 1969, 44/35589; May 9, 1969, 44/42448

Int. Cl. B66c *17/08*

U.S. Cl. 214—37 **14 Claims**



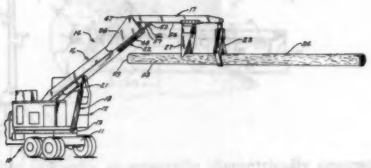
The invention is concerned with an apparatus for charging raw materials or ore rocks into a furnace, and uses four bells namely a large bell, a middle bell, a small bell and a rotating hopper bell serving as the charging apparatus for the furnace, and these bells are formed so as to provide sealing and charging or distributing functions and each of them is suitably operated to smoothly charge raw materials as well as to seal the top of the furnace to thereby fully maintain the pressure at the top of the furnace in order to provide excellant furnace operation.

3,695,467

BOOM ASSEMBLY FOR A CRANE

John L. Grundon, E. 16th & Howard Dr., Des Moines, Iowa

Filed Sept. 15, 1970, Ser. No. 72,383
Int. Cl. B66c 1/47
U.S. Cl. 214—147 G 2 Claims



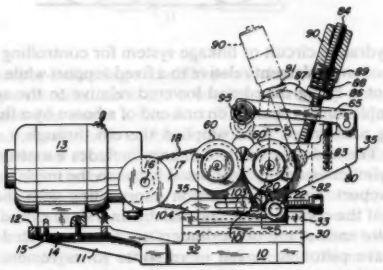
The boom assembly has a boom member and a stock member of box constructions with the stick member pivoted to the boom member adjacent the top of an upright extension provided at the free or forward end of the boom member. The actuating cylinder for the stick member is located within the boom member, and the actuating cylinder for the boom member projects transversely therethrough adjacent its rear end for pivotal connection with the upper wall of the boom member.

3,695,468

WORK HOLDER

Harry G. Stevens, 1029 Terracewood Drive, Englewood, Ohio, and Robert Earl Smith, 4224 Scrubb Drive, Kettering, Ohio

Filed April 29, 1970, Ser. No. 32,928
Int. Cl. B65g 7/00
U.S. Cl. 214—340 18 Claims



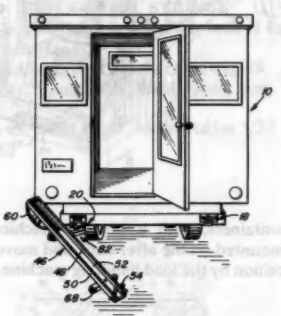
A work holder capable of holding a work piece having a generally arcuate circumferential body portion, to give location, baring, and rotating support to said body portion while presenting another body portion of said work piece for grinding and like operations. The invention device features simplified and improved holding means including unique roller modules which per se incorporate their drive means and have simple means adapting them to mount various size work pieces without loss of efficiency. It also provides a continuous drive system for such modules distinguished by precision control means affording a maximum use of applied power. It is further characterized by the application of O-rings to at least one roller module in a manner to exert a balanced and positive rotative influence to the workpiece. Means are provided to precisely reference a work piece to a cutting tool and to simply induce an angular disposition of or apply an axial driving force to a work piece during a cutting operation.

3,695,469

MOTORCYCLE CARRIER

Ronald E. Arant, 1617 Conger, Olympia, Wash.

Filed Nov. 16, 1970, Ser. No. 89,696
Int. Cl. B60r 9/00
U.S. Cl. 214—450 12 Claims



An elongated support member for disposition transversely of the rear or front end of a motor vehicle or trailer for supporting a motorcycle disposed lengthwise on the support member. One end of the support member includes a wheel well for receiving one wheel of the motorcycle and the corresponding end of the support member is supported from one leg of a horizontally disposed L-shaped support arm for oscillation about an axis extending along that leg and with the leg disposed generally transverse to the elongated support member. The free end of the other leg of the L-shaped support arm is supported from a bumper mounted bracket for oscillation about an upstanding axis. Also, the elongated support member is oscillatably supported from the first-mentioned leg of the L-shaped support arm for oscillation about a vertical axis and the other end of the elongated support member is removably pivotally supported from one end portion of a second support arm whose other end is pivotally supported from a corresponding bumper mounted support bracket for oscillation about an upstanding axis. Still further, the second-mentioned leg of the L-shaped support arm is adjustable in length and the pivot axes of the first-mentioned end of the support member relative to the first-mentioned leg of the L-shaped support arm are spaced lengthwise of the support member from the wheel well toward the opposite end of the support member.

3,695,470

Patent Not Issued For This Number

3,695,471

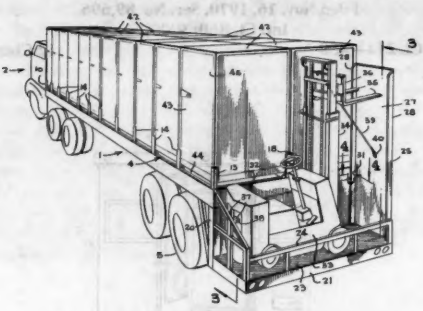
TRANSPORT VEHICLE

William C. Rivers, Jr., 2848 Village Grove Dr. South, Jacksonville, Fla.

Division of Ser. No. 808,531, March 19, 1969, Pat. No. 3,561,621. This application May 15, 1970, Ser. No. 48,662
Int. Cl. B60p 1/64
U.S. Cl. 214—515 1 Claim

A transport vehicle having a load bed with upstanding guides defining container positions on the bed, and containers having downwardly converging pallet bottoms for automatic

orienting at the container positions. The vehicle has an after deck carrying a load handling machine for loading and unloading containers, with a pivoted machine-loading ramp pivotally mounted on the after deck and movable to and from loading position by the load handling machine.



3,695,472

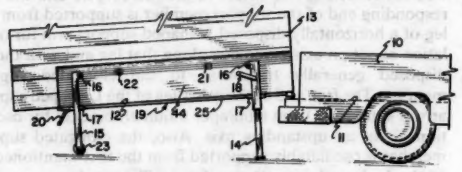
CAMPER LOADING AND UNLOADING DEVICE

Reed Rasmussen, 168 West Gentile St., Layton, Utah

Filed March 30, 1970, Ser. No. 23,877

Int. Cl. B60p *1/64*

U.S. Cl. 214—517 **7 Claims**



Apparatus for loading and unloading a camper onto and off of the bed of a traction vehicle which includes an elongated link member; first and second attaching means for attaching the link to the bottom of the camper proximate the camper's front end and proximate its rear end; propelling means coacting with the link for propelling a predetermined segment of the link to a first position proximate the camper's front end and to a second position proximate the camper's rear end; and connecting means secured to the bed of the traction vehicle proximate the bed's rear end for fixedly connecting the segment of the link to the vehicle's bed such that the camper is drawn onto and off of the bed by moving the link segment between the opposite ends of the camper.

3,695,473

TAG LINE CONTROL MECHANISM

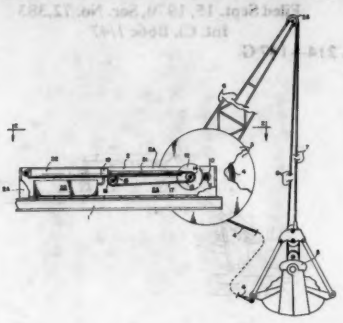
Robert W. Martin, 7102 N. E. 63rd Ave., Vancouver, Wash.

Filed Oct. 28, 1970, Ser. No. 84,717

Int. Cl. B66c *23/94*

U.S. Cl. 214—657 **7 Claims**

A control mechanism for a tag line extending from a drum on the crane chassis to a clam shell bucket or similar lifting instrumentality suspended in the normal manner by the crane. The tag line drum is powered by stored hydraulic pressure for tensioning of the tag line to prevent undesired bucket movement. Drum rotation occurs as the clam shell bucket is lowered with such rotation being translated into piston movement to charge a fluid pressure accumulator. Oppositely, raising of the clam shell bucket, resulting in lessening of tag line tension, permits the stored hydraulic pressure to rewind the drum to maintain desired tension on the tag line. A sprocket and chain assembly in combination with reduction gearing serves to translate rotary drum movement into rectilinear piston movement and vice versa.



3,695,474

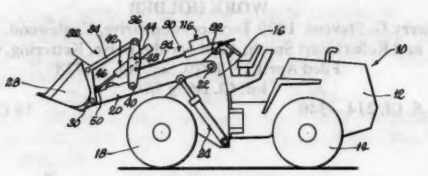
HYDRAULIC CONTROL LINKAGE FOR IMPLEMENT

Richard P. Blakely, Rockford, Ill., assignor to J. I. Case Company

Filed Aug. 5, 1970, Ser. No. 61,359

Int. Cl. E02f *3/00*

U.S. Cl. 214—771 **21 Claims**



A hydraulic circuit or linkage system for controlling the attitude of an implement relative to a fixed support while the implement is being raised and lowered relative to the support. The implement is pivoted on one end of a boom by a fluid ram having pressurized fluid supplied thereto through a control valve. The hydraulic control linkage includes a master piston and cylinder assembly interposed between the implement and the support with a slave piston cooperating with the valve spool of the control valve and slidable in a slave cylinder. The opposite ends of the two cylinders are interconnected so that the slave piston is moved in response to movement of the master piston to automatically maintain the predetermined attitude of the implement relative to a fixed reference plane. The hydraulic control linkage further includes mechanism for automatically stopping the bucket at a desired angular relation while it is moving between a first and a second maximum pivoted position and automatically preventing the movement of the bucket beyond the second maximum pivoted position. This is accomplished through a valve having a plurality of flow paths between the conduits interconnecting opposite ends of the two cylinders.

3,695,475

CHILD-PROOF CLOSURE

Herbert S. Ruekberg, Highland Park, Ill., assignor to Continental Can Company, Inc., New York, N.Y.

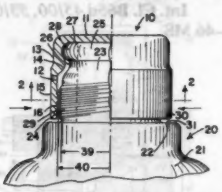
Filed June 15, 1971, Ser. No. 153,236

Int. Cl. A61j *1/00;* **B65d** *55/02*

U.S. Cl. 215—9 **8 Claims**

A child-proof snap-on closure for a container, the container pouring lip and the closure skirt including upper opposed

beads retaining the closure on the container. The container neck and the closure skirt including lower spaced opposed threads for removal of the snap-on closure. The threaded lower skirt portion being flexible around its entire periphery



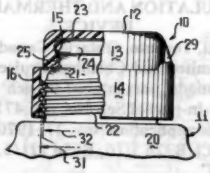
and deflectable inwardly at generally diametrically opposed points to engage the threaded neck portion where upon relative rotation, the threaded skirt is driven upwardly on the threaded neck, thus forcing the skirt bead upwardly over the pouring lip bead to remove the closure.

3,695,476

TAMPER-INDICATING AND CHILD-PROOF CLOSURE

Herbert S. Ruekberg, Highland Park, Ill., assignor to Continental Can Company, Inc., New York, N.Y.

Filed June 15, 1971, Ser. No. 153,292
Int. Cl. B65d *55/02*
U.S. Cl. 215—9 **9 Claims**



A tamper-indicating and child-proof closure for a container having a threaded neck and a beaded pouring lip comprising an upper skirt and a lower skirt. The upper skirt includes an internal annular snap-on bead which seats under the pouring lip. The lower skirt includes internal threads complementary to the neck threads and outwardly spaced therefrom. The upper and lower skirts are non-severably connected along a short arc and severably connected by horizontal fracture bridges along substantially circumferential contact surface. The normal spacing of the lower skirt threads from the neck threads permits turning of the closure without removal thereof until the lower skirt is deflected inwardly to engage the threaded neck. Upon deflection of the lower skirt and a small amount of rotation, a portion of the snap-on bead is progressively uplifted over the pouring lip resulting in the eventual removal of the closure during which circumferentially spaced bridges joining the upper and lower skirts are fractured to permit the removal of the closure and additionally provide a tamper-indicating function.

3,695,477

PLASTISOLS AND GASKETS

Robert P. Edmonston, Billerica, Mass.; John W. Lefforge, Lynnfield, Mass., and George C. Keller, East Derry, N.H., assignors to W. R. Grace & Co., Cambridge, Mass.

Filed May 18, 1970, Ser. No. 38,491
Int. Cl. C08f *29/24, 29/12;* **B65d** *53/00*
U.S. Cl. 215—40 **3 Claims**

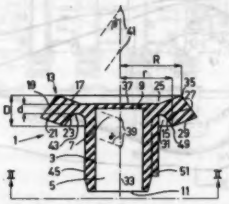
Plastisols, preferably of polyvinyl chloride, having a high yield value and low high shear viscosities are obtained by thickening conventional plastisol preparations with about 1 to 40 parts of certain block copolymers of the A-B-A type in which B is an elastomeric polymer core and A stands for a thermoplastic polymerized alkenyl aromatic compound. Tough, resilient gaskets can be manufactured from these improved materials.

3,695,478

FLEXIBLY DEFORMABLE STOPPER FOR A HYPODERMIC SYRINGE

Tjwan Khing Sie, and Hendrik Alle Post, both of Emmasingel, Eindhoven, Netherlands

Filed Aug. 10, 1970, Ser. No. 62,389
Claims priority, application Netherlands, Aug. 23, 1969, 6912907
Int. Cl. B65d *39/12, 41/00;* **A61m** *5/28*
U.S. Cl. 215—52 **4 Claims**



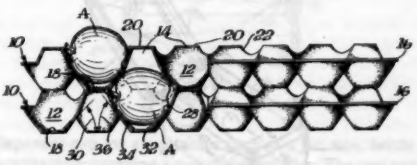
A flexibly deformable stopper for a hypodermic syringe consisting of a neck having a central channel, a diaphragm at one end of the neck and an annular flange having a quadrangular cross-section at the closed end. The front face and the rear face of the flange enclose an acute angle with the neck and extend in the same direction, the outer edge projecting beyond the front side of the diaphragm in such manner that during the clamping operation of the flange the diaphragm is pre-stretched.

3,695,479

TRAY WITH REINFORCED ARTICLE POCKETS

Kenneth L. Crabtree, Fairfield, Maine, assignor to Keyes Fibre Company, Waterville, Maine

Filed Nov. 16, 1970, Ser. No. 89,547
Int. Cl. B65d *85/34*
U.S. Cl. 217—26.5 **4 Claims**



A molded packaging tray having a plurality of downwardly dished pockets for receiving soft, round, delicate articles such as apples, peaches and tomatoes, and a plurality of upwardly tapering posts. The pockets and posts are arranged so that when two or more trays are properly oriented in a stack the flat pocket bottoms of one tray rest on the flat post tops of the next lower tray in the stack, rather than resting on the fruit packaged in the next lower tray. The pockets are substantially circular in horizontal cross-section at their approximate mid-level between the pocket bottoms and the post tops to smoothly support the delicate fruit, and the pockets are without inwardly directed protrusions. The pockets below the approximate mid-level taper inwardly to join the pocket bot-

toms at a low angle not greater than about 55° from the horizontal to minimize the total height of the tray with respect to the diameter of the fruit packaged therein. Four reinforcing ribs are associated with each pocket below its mid-level, the ribs being outwardly convex in horizontal cross-section, and being joined to the pocket bottoms at their lower extremities and tapering upwardly therefrom to merge with the pockets. The pocket bottoms and the post tops are similar in shape and generally coextensive in size.

3,695,480

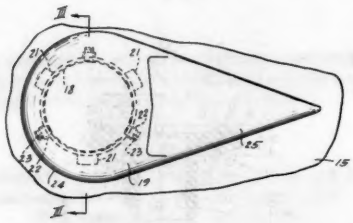
STREAMLINING MOTORCYCLE GAS TANK CLOSURE DEVICE

Anthony J. Castiglia, 412 Sherwood Drive, Streamwood, Ill.

Filed Nov. 19, 1970, Ser. No. 91,071

Int. Cl. B65d *39/00*

U.S. Cl. 220—24 GT **10 Claims**



Streamlining of gas tank closure caps is effected by a device which may be provided as an optional attachment, or which may be carried as a functionally integral inseparable part of the cap structure. Not only is the cap concealed, but an appearance is afforded of streamline integrity of design with the gas tank. Additionally, the device provides a protective shield as well as a convenient operating handle for the tank closure cap.

3,695,481

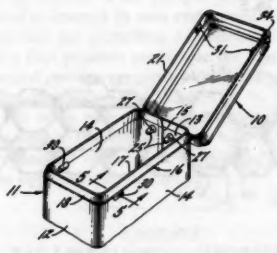
HINGED PLASTIC CLOSURE FOR SHEET METAL CANS

John A. Foster, and Carl A. Filipowicz, both of Rockford, Ill., assignors to J. L. Clark Manufacturing Co., Rockford, Ill.

Filed Oct. 8, 1970, Ser. No. 79,069

Int. Cl. B65d *43/16*

U.S. Cl. 220—31 S **7 Claims**



The open end of a tubular sheet metal container of rectangular cross-section is closed by telescoping down over an outwardly and downwardly turned flange near the container lip a cover of resilient plastic having a depending peripheral skirt with a tab depending from one shorter end thereof and secured against the outer side of the container wall by integral projections pressed through holes in such wall. The cover is held releasably in closed position by nibs projecting inwardly from the skirt near the free end thereof and interlocked beneath the edge of the hem flange.

3,695,482

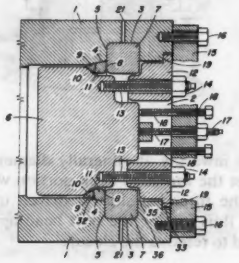
PRESSURE VESSEL SEAL

Colin Smith, Upper Warlingham, Surrey, England, assignor to The Lummus Company, Bloomfield, N.J.

Continuation-in-part of Ser. No. 836,462, June 25, 1969, abandoned. This application June 14, 1971, Ser. No. 152,553

Int. Cl. B65d *45/00, 53/00*

U.S. Cl. 220—46 MS **8 Claims**



A pressure vessel including a sealing structure for the cover which comprises a triangularly-shaped gasket in sealing engagement with a curved shoulder on the cover, a gasket engaging surface of the vessel wall and a backing ring positioned between the gasket and a key-ring located in a groove in the vessel wall.

3,695,483

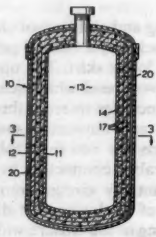
THERMAL INSULATION AND THERMALLY INSULATED DEVICE

Louis A. Pogorski, Toronto, Ontario, Canada, assignor to Gulf Oil Canada Limited and Chemical Projects Limited, Toronto, Ontario, Canada, part interest to each

Continuation-in-part of Ser. No. 765,471, Oct. 7, 1968, abandoned. This application Nov. 27, 1970, Ser. No. 93,365

Int. Cl. B32b *5/16;* **B65d** *11/16, 23/02*

U.S. Cl. 220—9 C **3 Claims**



A load supporting thermal insulator comprising a flexible casing that is filled with compacted material in the form of finely divided particles. The compacted material exerts a pressure of at least 1 lb. per square inch over the inner surface of the casing and has a coefficient of thermal conductivity less than that of the interstitial gas between the particles under the same conditions of temperature and pressure.

3,695,484

TRAY DISPENSER

Harvey T. Hollinger, Concordia, Kans.

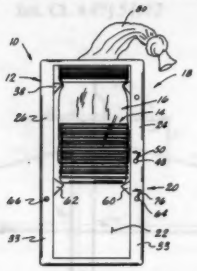
Filed Aug. 24, 1970, Ser. No. 66,460

Int. Cl. B65g *59/06*

U.S. Cl. 221—296 **3 Claims**

This invention is a tray dispenser. It has a housing with a tray storage area in the upper portion thereof above a tray

receiving portion. Clutches mounted in the housing hold a quantity of stacked trays in the storage area and other clutches hold and release a plurality of trays from the storage area into



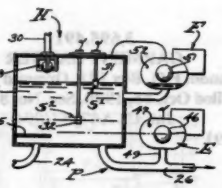
the receiving area. Separate controls operate the clutches independently. More particularly this invention is adapted to hold a quantity of trays in the storage area and release a small quantity of them into the receiving area.

3,695,485

AUTOMATIC SAFETY FEED SYSTEM FOR LIQUIDS

Frederick G. Littlejohn, 17352 Sunset Blvd. Apt. 702D, Pacific Palisades, Calif.

Filed Sept. 21, 1970, Ser. No. 73,784
Int. Cl. B67d *5/08*
U.S. Cl. 222—68 **21 Claims**



A unit system adapted to feed any number of liquid destinations on demand, especially dangerous liquids, and comprising a protected storage of said liquid, a motor driven pump means supplying said liquid into a holding means, a safety inlet valve governing flow of liquid from said pump means and into the holding means, and a flow outlet dispensing the said liquid; the invention residing in a motor and safety inlet control means responsive to high and low level sensors in said holding means so as to maintain a normal level therein, outlet safety means responsive to excessive flow in said outlet from the holding means and closing the safety inlet valve, and overflow safety means responsive to flooding of the holding means and overriding the motor control means. Utility resides in the adaptability to multiple installations wherein the fluid circuitry of each unit remains individually operable and protected while drawing from a common storage and motor driven pump means.

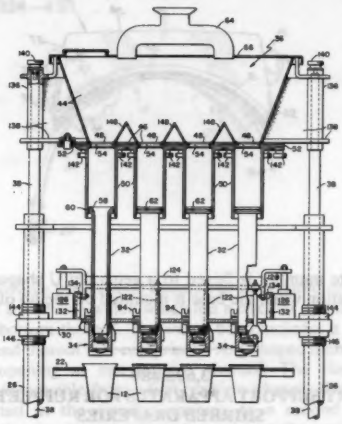
3,695,486

FOOD DISPENSER

Robert J. Warner, Lexington, Mass., assignor to Sweetheart Plastics, Inc., Wilmington, Mass.

Filed May 28, 1970, Ser. No. 41,400
Int. Cl. B65b *3/30*
U.S. Cl. 222—162 **2 Claims**

A dispensing and packaging technique for use with fluent, semi-liquid foods of the type which must be handled gently to avoid bruising or otherwise adversely effecting the quality of the food product. The technique includes storing a quantity of the food in an elevated supply trough and then pumping the food from the trough, in measured charges, to the packaging



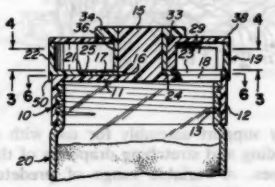
containers. The technique includes an arrangement by which the food product advances along a straight line from the trough to the container thus avoiding any tubing bends, pressure variations, etc. which might affect adversely the food product.

3,695,487

DISPENSER CAP

Jack E. Slayton, 5795 Rosebury Dr., Dayton, Ohio, and Eugene F. Whipp, 7704 Little Richmond, Dayton, Ohio

Filed Oct. 19, 1970, Ser. No. 81,880
Int. Cl. G01f *11/48*
U.S. Cl. 222—430 **12 Claims**



A dispenser cap for a container such as a jar, can, bottle or like receptacle containing a pourable material. The cap per se incorporates structure for dispensing measured quantities of material from the container and includes a control member settable for quantity selection purposes.

3,695,488

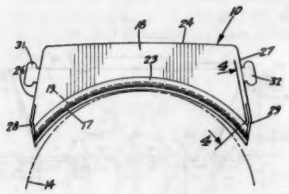
CONTAINER SPOUT

Sven O. Olsson, 7708 Glasgow Drive, Minneapolis, Minn.

Filed Oct. 26, 1970, Ser. No. 83,930
Int. Cl. B65d *5/72*
U.S. Cl. 222—570 **10 Claims**

A pouring spout removably mounted on a container, as a paint can, having an upwardly directed circular lip surrounding the open top of the container. The spout is a one piece pliable plastic member having a base with an arcuate groove with

a radius of curvature larger than the radius of curvature of the container lip and a sheet chute member attached to the base.



The chute member is flexed to a generally U shaped trough configuration when the base is mounted on the lip of the container.

3,695,489

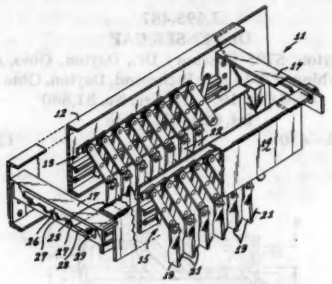
DRAPERY SUPPORT APPARATUS FOR RUFFLETTE AND SHIRRED DRAPERIES

Robert M. Kirche, 411 Arbor Vitae, Inglewood, Calif.

Filed Jan. 12, 1972, Ser. No. 217,147

Int. Cl. A41h *43/00*; D05b *35/08*; D06j *1/00*

U.S. Cl. 223—34 **9 Claims**



A drapery support assembly for use with apparatus for pleating, folding and stretching draperies of the shirred and rufflette types. A variable range of predetermined fixed distances is provided by securing one point at the upper portion of a shirred or rufflette drapery at a forward location on the assembly and then directing the upper most portion of the drapery back to a fixed predetermined rearward location on the assembly where it is folded and returned back to the forward location where it is then pinned at a point adjacent to said first point.

3,695,490

FABRIC ARTICLE EVERTING DEVICE HAVING LATCHING MEANS WITH REMOTELY-ACTUATED RELEASE

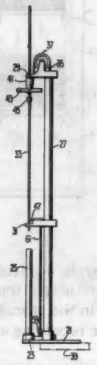
Aaron Glassman, Scranton, Pa., assignor to Pennsylvania Sewing Research Corp.

Filed July 16, 1970, Ser. No. 55,473

Int. Cl. A41h *43/00*

U.S. Cl. 223—40 **4 Claims**

A device comprising a rigid tube adapted to receive a tubular fabric article thereon and a rod, slidable into the tube and adapted to evert the article into the tube. The device has a means for latching the rod at the end of its travel and means,



remote from the latching means, for actuating the release of the rod to permit it to return to its original position.

3,695,491

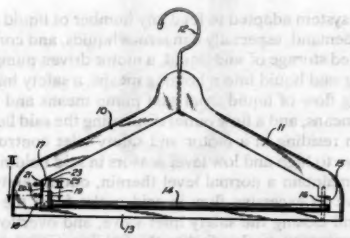
GARMENT HANGER

Charles J. Orlando, P.O. Box 121, Ormond Beach, Fla.

Filed Oct. 16, 1970, Ser. No. 81,439

Int. Cl. A47j *51/094*

U.S. Cl. 223—91 **1 Claim**



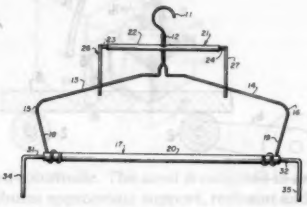
A garment hanger has a main frame provided with oppositely extending arms and a garment supporting bar connected between the ends of these bars. The hanger has another garment holding bar extending above the supporting bar. The holding bar may extend parallel to the supporting bar and may be swung at right angles thereto. This is accomplished by the use of a pin extending freely through the holding bar and having one end fixed to the supporting bar and the other end fixed to an adjacent arm. The opposite end of the holding bar is received and is enclosed by a holder fixed between the supporting bar and the other arm. The holder has an opening permitting the passage of said recessed end.

3,695,492

ADJUSTABLE GARMENT SHAPE-RETAINING HANGER

Helen Sheba, 320 S. Harrison St., East Orange, N.J.

Filed June 22, 1970, Ser. No. 48,128
Int. Cl. A47j *51/12*
U.S. Cl. 223—94 10 Claims



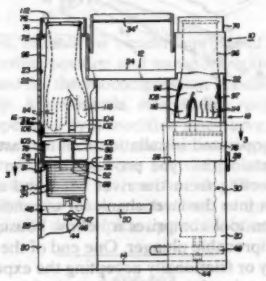
An adjustable, garment shape-retaining hanger having a laterally expandable neck shaping support mounted beneath a hook, a pair of opposed, shoulder supports and sleeve shapers and, a laterally adjustable side seam-shaping support mounted to and between the bottom ends of the sleeve shapers.

3,695,493

METHOD AND APPARATUS FOR APPLYING OR REMOVING GLOVES

Robert J. Karr, 1605 Sixteenth St., Wyandotte, Mich.

Filed Aug. 31, 1970, Ser. No. 68,173
Int. Cl. A47j *51/06*
U.S. Cl. 223—111 7 Claims



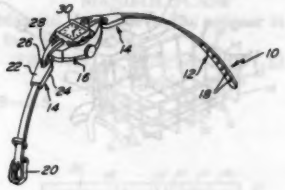
This invention relates to a mechanism for and method of applying and removing fluid impermeable gloves without the necessity of manually contacting the exterior of the gloves. The mechanism employed comprises a means for suspending and sealing a glove within a vacuum chamber and means for evacuating the chamber to outwardly distend the glove to a size greater than that of the user's hand. After the insertion of the hand into the distended glove, the chamber is restored to atmospheric pressure and the glove fits the hand due to the inherent resiliency of the previously distended glove. The hand, with the glove applied thereto, is simply removed from the chamber. A reversal of this procedure, i.e., inserting the gloved hand into the chamber evacuating the chamber, and removing the hand, leaves the glove suspended in the chamber. The present disclosure provides a novel, inexpensive, pedal-operated device for carrying out these functions simultaneously on both hands of a user.

3,695,494

REMOVABLE WATCH BAND

Mates A. Bruner, 1113 Wynnbrook Place, Secane, Pa.

Continuation-in-part of Ser. No. 865,325, Oct. 10, 1969. This application Feb. 20, 1970, Ser. No. 12,984
Int. Cl. G04b *37/12*
U.S. Cl. 224—4 E 4 Claims



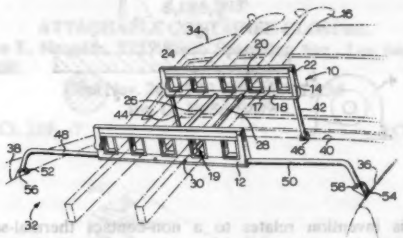
A removable watch band adapted to be secured on a watch casing of a woman's watch which has a circular opening at the top and bottom thereof. The watch band includes a coupling at each end thereof that comprises a ring-shaped member having an opening at one portion thereof. The ring-shaped member is movable from a first position wherein the ring can be inserted in the circular opening to a second position wherein the ring is retained on the casing at the opening. Detent means are provided for releaseably securing the ring-shaped member in its retaining position.

3,695,495

CARRIAGE FOR SKIS

Ronald W. Parsons, Newmarket, Ontario, Canada, assignor to Allcock, Laight & Westwood Limited, Bramalea, Ontario, Canada

Filed Oct. 28, 1970, Ser. No. 84,770
Int. Cl. B60r *9/00*
U.S. Cl. 224—29 R 13 Claims



A ski carrier is provided for mounting on a trunk lid of a motor vehicle. The carrier includes a first and second ski holders spaced apart from each other and capable of holding skis in substantially fixed relation to the holders. The holders are mounted on the trunk lid by mounting means including feet which engage and are held by the sides and at least one of ends of the trunk lid. At least one of the mounting means having feet engaging the sides of the trunk lid is adjustable to accommodate trunk lids of varying width.

3,695,496

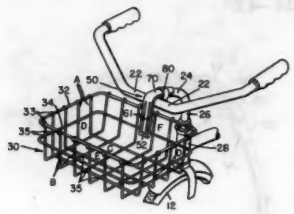
BICYCLE BASKET

Robert F. Humlong, Maysville, Ky., assignor to Wald Manufacturing Company, Incorporated, Maysville, Ky.

Filed Oct. 5, 1970, Ser. No. 78,041
Int. Cl. B62j *7/06*
U.S. Cl. 224—36 3 Claims

Means in the form of a single, rigid mounting bracket having a first, depending leg secured to and carried by a bicycle

basket and a second, rearwardly projecting mounting leg adapted to overlie the upper surface of the central portion of a velocipede handlebar is provided for eliminating the need for



leather straps, metal clamps and the like as heretofore used for securing portions of the basket, per se, to those side portions of a handlebar which are on opposite sides of the central or stern portion thereof.

3,695,497

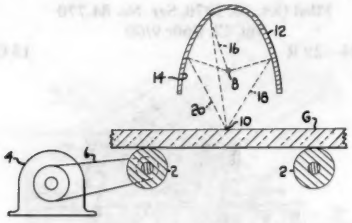
METHOD OF SEVERING GLASS

Terrence A. Dear, Newark, Del., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 708,952, Feb. 28, 1968, abandoned. This application Aug. 26, 1970, Ser. No. 66,940

Int. Cl. B26f *3/00*

U.S. Cl. 225—2 **27 Claims**



This invention relates to a non-contact thermal-score, mechanical snap method and apparatus for reliably cutting glass yielding pieces of glass having a high edge strength. A delineated infrared source is positioned at one focus of an elliptical reflector means, thereby causing its energy to be concentrated at a focus locus that is caused to coincide with one surface of the piece of glass to be cut along an intended line of fracture, creating a thermal score or heat path. The piece of glass is then severed by applying a bending moment around the heat path.

3,695,498

NON-CONTACT THERMAL CUTTING

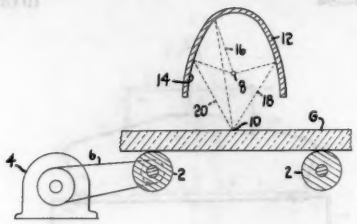
Terrence A. Dear, Newark, Del., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 708,952, Feb. 28, 1968, abandoned. This application Aug. 26, 1970, Ser. No. 66,941

Int. Cl. B26f *3/14*

U.S. Cl. 225—1 **10 Claims**

Non-contact thermal cutting is done reliably, yielding cut pieces of glass having edge strength never hitherto reliably achieved. A suitably delineated infrared source is positioned at one focus of an elliptical reflector means, thereby causing its energy to be concentrated at a focus locus that is caused to coincide with one surface of the piece of glass to be cut along



an intended line of fracture, the infrared source being such as to generate in the piece of glass to be severed a stress of at least 725 grams per square millimeter.

3,695,499

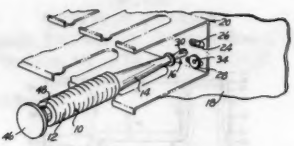
FASTENER INSTALLATION

Philip W. Taylor, Howell, Mich., assignor to Taylor Industries, Inc., Howell, Mich.

Filed June 9, 1971, Ser. No. 151,283

Int. Cl. B21j *15/10*

U.S. Cl. 227—52 **8 Claims**



A manually operated installation tool for fasteners such as expansion rivets of the type provided with an expander pin normally projecting from the rivet head and adapted to be forcibly driven into the rivet shank for expanding the shank. The installation tool comprises a hollow housing in which is disposed a reciprocable plunger. One end of the housing has a bore resiliently or frictionally accepting the expander pin projecting from the rivet head, with one end of the plunger proximate the end of the rivet pin, such that the tool is used for inserting the rivet into the rivet accepting apertures of a mechanical assembly, and the expander pin is subsequently forcibly driven into the rivet shank for expanding the shank as a result of manually displacing the plunger by manually applying pressure on the other end of the plunger provided with an appropriate knob.

3,695,500

CONTRA-RESONANT ANVIL

Thomas A. Walraven; Nicholas Maropis, both of West Chester; William C. Elmore, Swarthmore, and Janet Devine, West Chester, all of Pa., assignors to Aeroprojects Incorporated, West Chester, Pa.

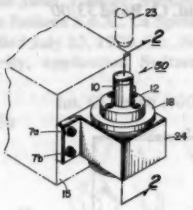
Continuation-in-part of Ser. No. 717,295, March 29, 1968, abandoned. This application June 1, 1970, Ser. No. 42,518

Int. Cl. B23k *1/06, 5/20*

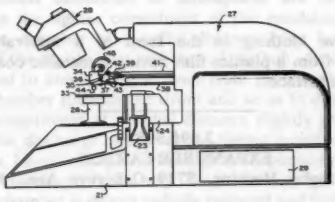
U.S. Cl. 228—1 **8 Claims**

Apparatus and method are disclosed for welding metal members by means of vibratory energy. Reliability of such

welding apparatus is improved by provision of an anvil designed for regulated response to excitation by an ultrasonically-powered sonotrode. The anvil is mounted in an assembly which contributes appropriate support, restraint and isolation.

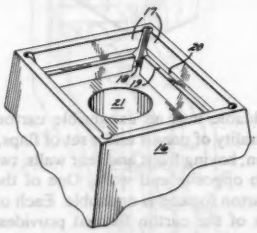


3,695,501
DIE BONDER APPARATUS
William Radobenko, Scottsdale, Ariz., assignor to Automated Equipment Corp., Phoenix, Ariz.
Filed May 21, 1970, Ser. No. 39,403
Int. Cl. B23k *21/00*
U.S. Cl. 228—3 **34 Claims**



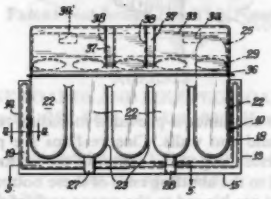
A high speed, reliable die bonder is provided for picking up dice from a loading position and transporting them to a bonding position and for thermocompression bonding the dice to a transistor strip. A low-inertia, straight-line reciprocating ram mechanism operated by a modified sine-curve, motor-driven cam serves as the transport mechanism. Apparatus driven from the cam lifts and lowers the die pick-up mechanism, which is mounted on the ram mechanism. The transistor strip is indexed with the ram mechanism to synchronize the transistor strip with the die pick-up and die bonding.

3,695,502
BONDING TOOL
Floyd E. Gaiser, 12552 Singingwood Drive, Santa Ana, Calif.
Filed Sept. 14, 1970, Ser. No. 71,662
Int. Cl. B23k *1/00, 37/04*
U.S. Cl. 228—4 **6 Claims**



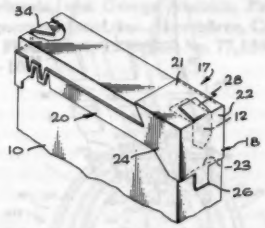
A microcircuit wafer or die bonding tool for use in microcircuit bonding apparatus to transport, locate and orient a microcircuit wafer. A working surface within the tip of the tool is characterized by a plurality of inclined facets adapted to engage parametrical edges of an upper surface of the wafer and undercut to provide both positive control of and minimum contact pressure upon the surfaces of the wafer during bonding of the wafer to a substrate.

3,695,503
MANIFOLD CASE
Joseph A. Mascetti, Jr., Geneva, Ill., assignor to Plastofilm Industries, Inc., Wheaton, Ill.
Filed Nov. 20, 1970, Ser. No. 91,231
Int. Cl. B65d *1/00*
U.S. Cl. 229—2.5 **8 Claims**



Two identical package halves are vacuum formed from a relatively thin plastic sheet. Along the bottom and along two side edges there are flanges with mating protuberances and sockets which snap together to hold the two halves together. Between the two ends there are a plurality of vertical pockets in each half. At the top of the pockets there is a slanting wall having openings therein through which the objects to be held in the pockets extend. A cap fits over the top of these objects and the slanting walls and snaps into place. At two locations along the bottom edge are a pair of bulges forming feet.

3,695,504
ATTACHABLE CONTAINER CLOSURE
James E. Simpson, 1757 South Spaulding Ave., Los Angeles, Calif.
Filed Nov. 20, 1970, Ser. No. 91,234
Int. Cl. B65d *17/16*
U.S. Cl. 229—7 **3 Claims**



An attachable container closure used in conjunction with and for the purpose of closing the opening in boxes or containers of the type used for packaging granular, powdered or flaked materials which are poured from the container through a nonreclosable opening typically made by the user's pressing against an aperture panel which is defined by a plurality of perforations in one wall of the container.

ERRATUM

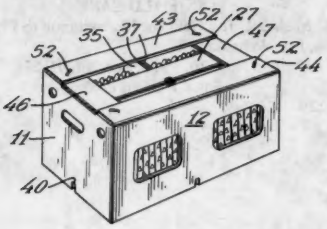
For Class 229—2.5 see:
Patent No. 3,695,561

3,695,505

ASPARAGUS CONTAINER

Donald G. Wolf, Salinas, Calif., assignor to Hoerner Waldorf Corporation, St. Paul, Minn.

Filed Sept. 17, 1970, Ser. No. 73,139
Int. Cl. B65d 5/48
U.S. Cl. 229—37 R 10 Claims



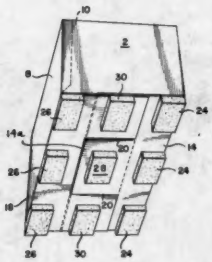
An asparagus container is provided including rectangularly arranged side and end walls. Closure flaps are provided on each side wall extending to the center of the bottom, partition flaps are hinged to the abutting ends of these bottom flaps, and supporting flaps are hinged to the upper ends of the partition flaps. Aligned slots extend across the side wall closure flaps and vertically through the partition walls. Bottom closure flaps are hinged to the end walls and underlie the side wall closure flaps. End wall partition flaps extend vertically through the slots. When filled, the side wall closure flaps and supporting flaps may be folded into upwardly diverging relation to divide the cross-sectional area into a center triangular strut and trapezoidal compartments on opposite sides thereof.

3,695,506

PALLETIZED CONTAINER BOTTOM CONSTRUCTION

Charles F. Cook, Boise, Idaho, assignor to Boise Cascade Corporation, Boise, Idaho

Filed June 2, 1971, Ser. No. 149,201
Int. Cl. B65d 5/02, 19/20
U.S. Cl. 229—37 8 Claims



An improved palletized container construction, characterized by the provision of overlapping interlocked bottom flaps to which are secured support blocks for supporting the container in an elevated position relative to a fixed surface. More particularly, a first side bottom flap is slotted at its free extremity to define a center interlocking portion contained between a pair of outer interlocking portions. The center interlocking portion carries at least one support block that is arranged for longitudinal alignment with corresponding support blocks carried by the other side bottom wall adjacent its free corner portions. Additional rows of support blocks are carried by said side bottom flaps adjacent and parallel with their hinge lines.

3,695,507

SURVIVAL BAG

Ronald G. Sams, Conduit Lane, Hoddesdon, England

Filed Jan. 26, 1970, Ser. No. 5,961
Int. Cl. B65d 33/00
U.S. Cl. 229—53 1 Claim

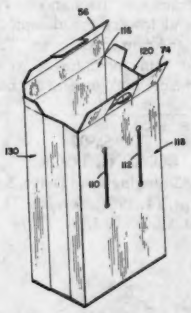
Protective clothing in the form of a survival bag is fabricated from a plastics film having a metallic coating applied to the surface.

3,695,508

EXPANSIBLE CARTON

Homer Douglas Hocking, 5719 Oakgrove Ave., Alameda, Calif.

Filed Oct. 16, 1970, Ser. No. 81,471
Int. Cl. B65d 5/08
U.S. Cl. 229—38 15 Claims



A blank foldable into an expansible carton, which blank provides a plurality of panels and a set of flaps, for the formation of a carton, having front and rear walls; two opposite side walls; and two opposite end walls. One of the side and end walls of the carton formed is openable. Each of the other side and end walls of the carton formed provides a pair of mutually-overlying pleats. The panels and flaps are adapted to be secured together in wall-forming positions. The carton formed is designed for triple expansion, by opening of the openable wall; and unfolding of each pair of mutually-overlying pleats.

3,695,509

CENTRIFUGAL SEPARATOR FOR SEPARATING EMULSIONS

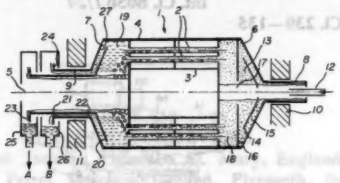
Alain Ferdinand Javet, Geneve, Switzerland, assignor to Termomeccanica Italiana S.p.A., La Spezia, Italy

Filed July 23, 1970, Ser. No. 57,718

Claims priority, application Switzerland, Aug. 8, 1969, 12071/69

Int. Cl. B04b *1/00*

U.S. Cl. 233—30 **6 Claims**



A centrifugal separator for emulsions comprises a rotating drum with an admission chamber at one end thereof, connected to atmosphere via an axial supply inlet, and a multitude of separating tubes arranged around an axial hub to extend longitudinally from the common admission chamber to a common outlet chamber at the other end of the drum. One or more outlets connected to atmosphere are arranged to discharge the lighter constituent of the emulsion from the discharge chamber at a radial distance lying between the radius of the supply inlet and that of the hub. An outlet duct connected to atmosphere extends from the periphery of the outlet chamber towards the drum axis so as to discharge the heavier constituent at a radial distance slightly greater than that of the discharge outlet for the lighter constituent of the emulsion. Liquid movement through the separator is provided through centrifugal force only. Emulsion supplied to the admission chamber is driven radially outward and forms therein a coaxial liquid level at atmospheric pressure. The lighter constituent forms in the outlet chamber a coaxial overflow level at atmospheric pressure at the discharge outlet. The heavier constituent forms a further coaxial overflow level at atmosphere pressure, at the discharge end of the outlet duct.

3,695,510

APPARATUS FOR READING PUNCHED CARDS

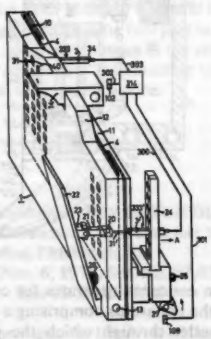
Ferdinand Ruesch, St. Gall, Switzerland, assignor to Gretag Aktiengesellschaft, Regensdorf, Switzerland

Filed Sept. 1, 1970, Ser. No. 68,603

Claims priority, application Sweden, Sept. 8, 1969, 13639/69

Int. Cl. G06k *1/04*

U.S. Cl. 234—30 **15 Claims**



Apparatus for reading punched cards is equipped with a punch mechanism for punching a hole at a specified area of a card to indicate implementation of the instructions stored on the card and read by the apparatus. The apparatus also has a sensing mechanism acting at the specified area of the card to check whether a hole already exists there when the card is inserted in the apparatus. The sensing of the presence of such a hole, indicating that the instructions on the card have already been implemented, prevents a repeated implementation of the instructions. Upon a card, not having a hole in the specified area, being accepted in the apparatus for reading of the instructions therefrom, the punch mechanism is locked against operation until a signal indicating implementation of the instructions is received. The apparatus finds particular application in process control.

3,695,511

Patent Not Issued For This Number

3,695,512

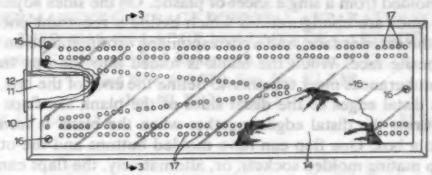
CRIBBAGE BOARDS AND LIKE PEG-BOARD DEVICES

John L. Trudel, 255 Bold St., Apt. 806, Hamilton, Ontario, Canada

Filed Oct. 28, 1971, Ser. No. 193,431

Int. Cl. A63f *1/18*

U.S. Cl. 235—90 **4 Claims**



A cribbage board or like peg-board device has a layer of resilient material interposed between a lamina base and the perforated lamina to assist in preventing the pegs from sticking in the holes of the perforated lamina.

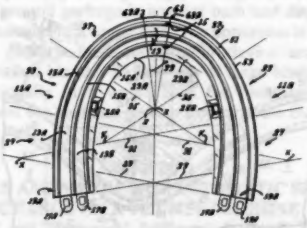
3,695,513

CURVE TRACK SYSTEM FOR TOY VEHICLES

William R. Baynes; Harvey W. LaBranche, both of Palos Verdes Peninsula, and George Soulakis, Pasadena, all of Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed Oct. 1, 1970, Ser. No. 77,159

U.S. Cl. 238—10 E **17 Claims**



Curved elongated track sections including curved upper vehicle supporting face portions with spaced vehicle guiding flanges are described. The curved track sections are banked and have a successively changing radius of curvature for stablely changing the direction of travel of self-powered and freely rolling toy vehicles in a relatively small amount of space. Also described is a dual lane configuration and an

added curve segment feature which provides additional vehicle direction change – from 180° to 197°, for example.

3,695,514

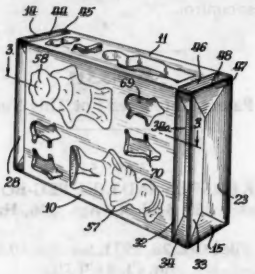
SINGLE SHEET PLASTIC BOX

Joseph A. Mascetti, Jr., Geneva, Ill., assignor to Plastofilm Industries, Inc., Wheaton, Ill.

Filed Nov. 20, 1970, Ser. No. 91,283

Int. Cl. B65d *1/00*

U.S. Cl. 229—2.5 **5 Claims**



A box has two long sides, two short sides, and two ends and is molded from a single sheet of plastic. On the sides adjacent the ends are configurations which define a reentrant pocket on the exterior face, and a corresponding protuberance on the opposite face. When the blank is folded into the box these protuberances meet together to define the ends of the box. At the distal edges of the distal sides of the blank are flaps for securing the distal edges together when the blank is formed into a box. One flap can have molded buttons and the other flap mating molded sockets; or, alternatively, the flaps can be heat welded to each other. Where the blank is to be folded between the sides there are longitudinal grooves on the inner side to provide a hinge. On the face of the sides between the end configurations are a plurality of depressions which add rigidity to the sides. These depressions can be in a form to provide cut-outs or molds for children.

3,695,515

FLUID COOLED THRUST NOZZLE FOR A ROCKET

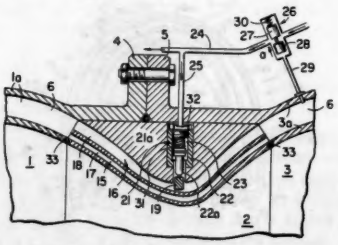
Karl Stockel, Ranhazweg 21, 8012 Ottobrunn, Germany

Division of Ser. No. 743,473, July 9, 1968, Pat. No. 3,605,412. This application April 21, 1970, Ser. No. 48,703

Claims priority, application Germany, July 19, 1967, P 16 26 063.2

Int. Cl. B64d *33/04*

U.S. Cl. 239—127.1 **5 Claims**



A fluid cooled combustion chamber for a rocket engine is composed of walls forming a longitudinally extending convergent-divergent thrust nozzle having a neck portion at its narrowest section. A radially inner row and a radially outer row of cooling ducts encircle the interior surface of the thrust nozzle at its neck portion with the ducts extending longitudinally into the convergent and divergent portions. The outlet end of the inner row of cooling ducts may be arranged to direct coolant fluid into the thrust nozzle with means providing a twist to the fluid as it enters the nozzle.

3,695,516

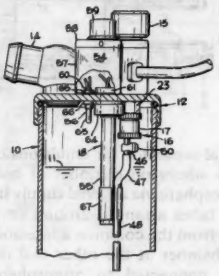
HEATED NEBULIZER SPRAY UNIT

Gerald L. Rogers, Ballwin, Mo., assignor to Stile-Craft Manufacturers, Inc., St. Louis, Mo.

Filed Nov. 19, 1970, Ser. No. 90,902

Int. Cl. B05b *1/24*

U.S. Cl. 239—135 **4 Claims**



This spray unit includes a container and a closure cap. A nebulizer unit and a heater unit are attached to the closure cap and so arranged that the heater element and the aspirator tube of said units are located side-by-side and project into the container parallel to each other. The heater element and the aspirator tube are clamped together so that the column of liquid passing up the aspirator tube is subjected to localized, rapid heating.

3,695,517

APPARATUS FOR CONTROLLING A FLOW OF A PRESSURE FLUID

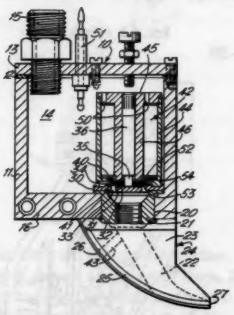
Thomas Henry Chapman, Sanderstead, England, assignor to Gunson's Sortex Limited, London, England

Filed Jan. 11, 1971, Ser. No. 105,566

Claims priority, application Great Britain, Feb. 11, 1970, 6,550/70

Int. Cl. B05b *1/30*

U.S. Cl. 239—583 **8 Claims**



The invention concerns apparatus for controlling a flow of pressure fluid, the apparatus comprising a chamber having an inlet and an outlet through which the pressure fluid may respectively be supplied to and may issue from the interior of the chamber, a valve member which is movable between open

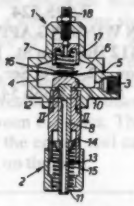
and closed positions in which a flow of pressure fluid from the interior of the chamber to the outlet is respectively permitted and prevented, the valve member having first and second oppositely disposed pressure surfaces which, in the said closed position, are respectively subjected to the pressures prevailing in the interior of the chamber and in the outlet, whereby the valve member is pressure urged towards the closed position, and means for respectively moving the valve member into the open position, the outlet having at least one vent therein to reduce the pressure acting on the said second pressure surface, whereby to assist closing movement of the valve member, a portion only of the fluid in the outlet passing to said vent.

3,695,518

FUEL INJECTOR DEVICES

Harold Ernest Jackson, Plympton St. Mary, England, assignor to Petrol Injection Limited, Plymouth, Devon, England

Filed Nov. 27, 1970, Ser. No. 92,987
Int. Cl. B05b *1/30*
U.S. Cl. 239—533 **9 Claims**



A fuel injector device in which the fuel flow path through the device includes a variable area metering orifice, the area of the orifice being adjusted in response to changes in fuel pressure at the injector device inlet. The orifice is formed by cooperation between one valve member and a fuel port in another valve member. The valve members are movable relative to each other and the fuel port extends in the direction of the relative movement and has a cross-sectional area which varies in that direction. A pressure-responsive member, for example a resilient diaphragm, senses the fuel pressure at the injector device inlet and causes relative movement between the valve members in response to changes in that pressure, to vary the area of the metering orifice. The fuel port may have a triangular cross-section, with both the base and height of the triangle increasing together along the fuel port in the direction of relative movement, whereby changes in the area of the metering orifice bear a "square law" relationship to changes in the inlet fuel pressure of the injector device.

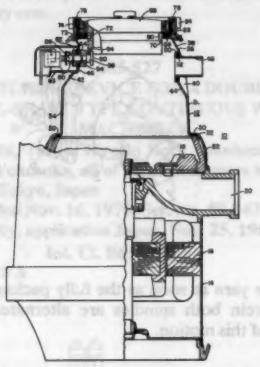
3,695,519

HOPPER ASSEMBLY FOR BATCH DISPOSER

Jack E. Bebinger, Columbus, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Nov. 6, 1970, Ser. No. 87,429
Int. Cl. B02c *18/42*
U.S. Cl. 241—46 B **6 Claims**

The invention provides a batch feed type food waste disposer having a unitized assembly of its hopper and hopper flange, with these two elements shaped so as to be formed from a non-corrosive sheet material such as stainless steel and rolled together or welded at their abutting edges to form a



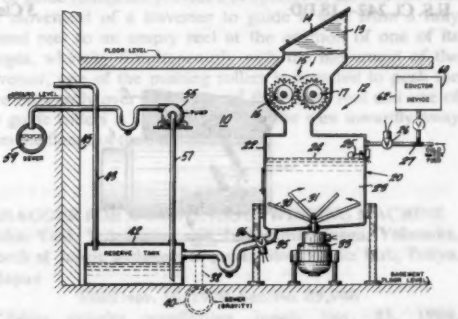
water-tight joint which includes, at the periphery of the joint, a cooperating opening for the stopper-switch that actuates the food waste disposer to an active comminuting condition.

3,695,520

PERMANENT GARBAGE DISPOSAL APPARATUS FOR DISPOSAL OF LARGE VOLUMES OF GARBAGE

Thomas G. Mauro, 1315 Kearney Ave., Bronx, N.Y.

Filed Nov. 6, 1970, Ser. No. 87,538
Int. Cl. B02c *4/08, 13/18*
U.S. Cl. 241—43 **3 Claims**



A garbage disposal apparatus permanently installed in a building for grinding bulk garbage in large quantities and blending the ground garbage in a water bath and disposing of the blended mixture in a sewer line. The apparatus is provided with a bulk garbage feed and grinder device and a permanently installed blender having sets of large blades driven counter-rotationally in a water bath for blending garbage discharged from the feed and grinder device to the blender.

3,695,521

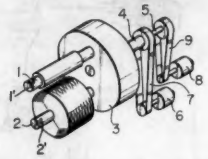
APPARATUS AND METHOD OF AUTOMATIC SPINDLE EXCHANGE ON A TEXTILE MACHINE

Soichi Torii, and Haruyoshi Ishikawa, both of Kyoto-shi, Japan, assignors to Torii Winding Machine Co., Ltd., Kyoto, Japan

Filed Jan. 20, 1970, Ser. No. 4,243
Claims priority, application Japan, Sept. 5, 1969, 44/69996
Int. Cl. B65h *54/02*
U.S. Cl. 242—18 A **4 Claims**

An apparatus and method for automatically carrying out substitution of a bare bobbin spindle for a fully packaged bob-

bin spindle through rotation of two spindles arranged in pairs around a common axis and transfer of a processing yarn from the old to the new bobbin while maintaining a continuous



supply of the yarn as soon as the fully packaged condition is sensed, wherein both spindles are alternately braked after completion of this motion.

3,695,522

DRIVER DRUM IN YARN WINDING MACHINES

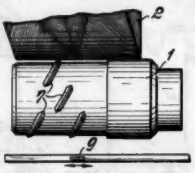
Albert Tho Pesch, Monchengladbach, and Wilhelm Maassen, Monchengladbach-Hardt, both of Germany, assignors to Walter Reiners, Monchengladbach, Germany

Continuation of Ser. No. 747,421, July 11, 1968, abandoned, which is a continuation-in-part of Ser. No. 475,442, July 28, 1965, abandoned. This application Sept. 15, 1970, Ser. No. 72,517

Claims priority, application Germany, July 11, 1968, R 38492

Int. Cl. B65h *54/42, 54/48*

U.S. Cl. 242—18 DD **3 Claims**



Rotatable driver drum in a yarn winding machine for producing conical yarn packages has a single peripheral surface portion drivingly engageable with the yarn package, the drum having a recess located at one end thereof, and at least one elongated protuberance extending from the recess and engageable with the yarn package, the elongated protuberance cooperating with the peripheral surface portion for driving the yarn package.

3,695,523

STRAND HANDLING APPARATUS

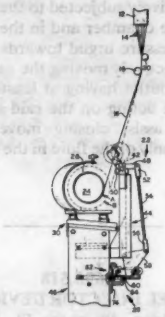
Samuel Richard Genson, Weston; Svend Aage Petersen, and Robert Lee Currier, both of Toledo, all of Ohio, assignors to Johns-Manville Corporation, New York, N.Y.

Filed Oct. 26, 1970, Ser. No. 83,807

Int. Cl. B65h *54/02, 54/28*

U.S. Cl. 242—18 R **4 Claims**

A strand guide for strand winding machines arranged on a mounting movable away from the winding mandrel at a rate corresponding to the strand buildup whereby the angle of introduction of the strand to the wound package is maintained constant to avoid changes in winding tension. The strand guide mount is moved as a timed function in one example through the medium of a fluid drive including a precision control check.



3,695,524

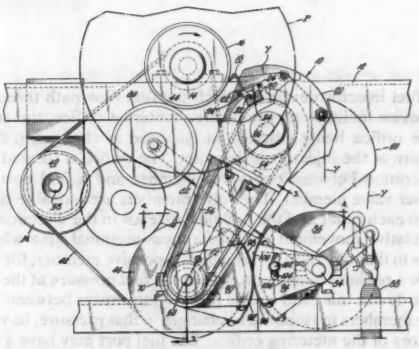
YARN WINDING APPARATUS

Ingham S. Roberts, 412 Harrison St., Ridley Park, Pa.

Filed Nov. 12, 1970, Ser. No. 88,875

Int. Cl. B65h *54/08*

U.S. Cl. 242—18 R **13 Claims**



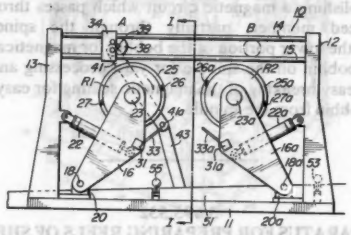
For use in yarn winding apparatus having takeup means for forming yarn into a package and traversing means for reciprocating the yarn to form helical wrappings on the package, a structural arrangement whereby the traverse assembly is pivoted on a first axis for movement of the traverse guide path toward and away from the package spindle and whereby a roller bail is mounted on a frame which is pivoted on a second axis for movement of the roller bail toward and away from the package spindle and whereby a segment attached to the traverse assembly and having an arcuate face centered on said first axis is operatively associated with a segment attached to the roller bail frame and having an arcuate face centered on said second axis so that movement of the roller bail away from the package spindle during package formation produces equal movement of the traverse guide path away from the package spindle to maintain a preset clearance between the guide path and the surface of the package.

3,695,525

APPARATUS FOR CONTINUOUSLY WINDING UP A LINEAR PRODUCT SUCH AS WIRE

Yasuhiko Otani, Kobe, Japan, assignor to Kobe Steel, Ltd., Kobe-shi, Japan

Filed March 17, 1970, Ser. No. 20,230
Int. Cl. B65h *54/02*
U.S. Cl. 242—25 A 7 Claims



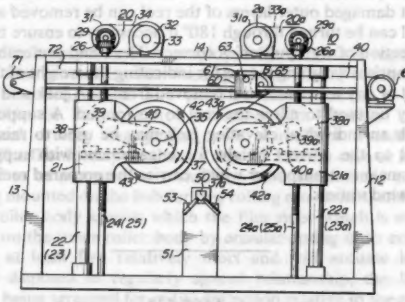
A continuous wire take-up apparatus having pair of rockable reel supporting frames. A disc is mounted on each pair of reel supporting frames adjacent one end of the reel for rotation therewith. One of the pairs of the frames is rocked down when the associated reel becomes substantially full of the wire. At the same time, a wire guiding sheave is moved axially of the reels to the above of the discs. A wire shifting rod is moved between the reels axially thereof to shift the wire beyond the discs. Claws project from the discs to engage the thus shifted wire and arrest it on the discs. The rotation of the discs cuts the wire between the discs. The cut end of the wire arrested on the disc for the empty reel causes a further length of the wire to be wound up thereon.

3,695,526

APPARATUS FOR CONTINUOUSLY WINDING UP LINEAR PRODUCTS SUCH AS WIRE

Yasuhiko Otani, Kobe, and Yoshio Ikegami, Nishinomiya, both of Japan, assignors to Kobe Steel, Ltd., Kobe-shi, Japan

Filed March 16, 1970, Ser. No. 19,679
Claims priority, application Japan, March 22, 1969, 44/25688
Int. Cl. B65h *54/00*
U.S. Cl. 242—25 A 13 Claims



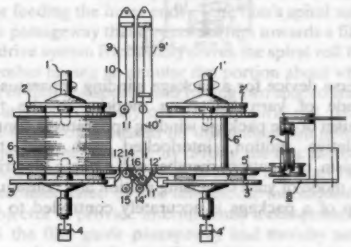
A wire take-up apparatus having a pair of reel supporting frames operable in such a manner that one of the frames is moved to its lowermost position when a reel thereon is substantially full of the wire while the other frame is moved upwardly with an empty reel thereon. A wire guiding sheeve is shifted to its axially endmost position above one ends of the reels when one of the reels becomes full of the wire and a wire shifting bar is simultaneously moved axially of the reels for causing the wire to be engaged and arrested on the empty reel by a claw on a rotatable disc provided adjacent said one end of the empty reel whereby the wire is transferred from the full reel to the empty one.

3,695,527

REEL SWITCHING DEVICE FOR A DOUBLE-REEL PARALLEL-SHAFT TYPE CONTINUOUS WINDING MACHINE

Sakae Kobayashi, Tokyo; Hiroshi Hori, Yokoham, and Toshio Matsunaga, Yokosuka, all of Japan, assignors to Japan Steel Works Ltd., Tokyo, Japan

Filed Nov. 16, 1970, Ser. No. 89,947
Claims priority, application Japan, Nov. 25, 1969, 44/94522
Int. Cl. B65h *54/00*
U.S. Cl. 242—25 A 3 Claims



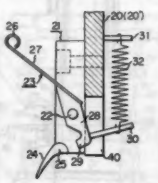
In a reel switching device for a double-reel parallel-shaft type continuous winding machine a set of pushing rollers and a set of guide rollers are provided to operate in association with the movement of a traverser to guide a wire from a fully wound reel to an empty reel at the position of one of its flanges, whereby simultaneously with the movement of the traverser, one of the pushing rollers is actuated to push the wire outwardly over the flange of the empty reel and one of the guide rollers is actuated to push the wire inwardly away from the flange of the fully wound reel.

3,695,528

SNAGGER FOR A CONTINUOUS WINDING MACHINE

Toshio Taki, Yokohama, and Toshio Matsunaga, Yokosuka, both of Japan, assignors to Japan Steel Works Ltd., Tokyo, Japan

Filed Nov. 16, 1970, Ser. No. 89,946
Claims priority, application Japan, Nov. 25, 1969, 44/112039
Int. Cl. B65w *54/00*
U.S. Cl. 242—25 A 5 Claims



A snagger comprises a stationary element adapted to be secured to the periphery of the snagger plate of the winding machine and a movable element pivotally secured to the stationary element. Both elements are provided with a curved surface to cooperate with each other to form a wedge to grasp a wire between them when the movable element is placed in an operative position by a reel mounted to the snagger plate.

3,695,529

TRAVERSE DEVICE IN PACKAGE WINDING APPARATUS

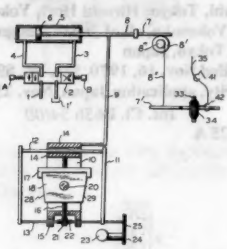
Kikuo Hori; Hiroshi Yamada, and Hiroshi Itoh, all of Matsuyama, Japan, assignors to Teijin Limited, Osaka, Japan

Filed April 8, 1970, Ser. No. 26,581

Claims priority, application Japan, Apr. 12, 1969, 44/28528; Apr. 23, 1969, 44/37354

Int. Cl. B65h *54/36*

U.S. Cl. 242—26.3 6 Claims



Traverse device for a package winding apparatus whereby the mode of yarn traversing motions in the traversing mechanism of the package winding apparatus is controlled by the relative motion, interlocked with said traversing mechanism, of a pattern member and a photo-electric system, and the mode of yarn traversing motion and consequently the build-up of a package is accurately controlled to a desired shape.

3,695,530

Patent Not Issued For This Number

ERRATUM

For Class 242—46 see:
Patent No. 3,695,561

3,695,531

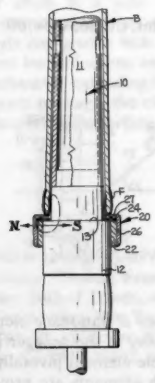
TEXTILE BOBBIN AND SPINDLE ASSEMBLY HAVING A MAGNETIC BOBBIN SEATER

Alvin C. Whitehead, Atlanta, Ga., assignor to Spring Mills, Inc., Fort Mills, S.C.

Filed Nov. 19, 1970, Ser. No. 91,029

Int. Cl. B65h *75/30*

U.S. Cl. 242—46.21 2 Claims



In a textile bobbin and spindle assembly for rotating to effect winding or other processing of yarn on a bobbin, the combination of a spindle for receiving a hollow bobbin thereon and having a bobbin receiving upper portion and a lower portion of greater diameter than the bobbin and the upper portion for defining a generally flat seating surface extending perpendicular to the longitudinal axis of the spindle at the juncture of the upper and lower portions thereof, and a magnetic bobbin seater positioned on the spindle at the seating surface for rotation with the spindle and for receiving the lower metallic end of the bobbin. The magnetic bobbin seater comprises a magnetized member and a non-magnetized member so arranged for establishing a magnetic circuit which passes through the magnetized member, partially through the spindle and through the lower portion of the bobbin for magnetically seating the bobbin on the spindle for yarn processing and which permits easy breaking of the magnetic seating for easy doffing of the bobbin from the spindle.

3,695,532

APPARATUS FOR PREPARING REELS OF SHEET MATERIAL FOR UNWINDING

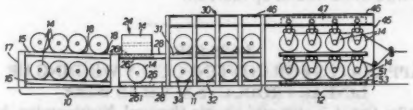
Horst Karl Lindstaedt, London, England, assignor to Mason Scott Thrissell Engineering Limited

Filed July 2, 1970, Ser. No. 51,837

Claims priority, application Great Britain, July 5, 1969, 33,987/69

Int. Cl. B65h *75/02*

U.S. Cl. 242—55 4 Claims



Apparatus for preparing large and heavy reels of sheet material such as paper or thin board for a subsequent unwinding operation, comprise a stand for supporting a reel and allowing the reel to rotate about a horizontal axis and means to allow pivotal movement of the stand about a vertical axis, so that damaged outer layers of the reel can be removed and the reel can be turned through 180° if necessary to ensure that the direction of web pull-off is correct. The stand preferably also comprises weighing means for indicating the weight of the reel and of any waste material removed from it. A jack and rollers may be used to allow the reel to be rotated. A support unit with an individual elevating jack may be used to raise each reel to the correct height for engagement with supporting means on a transporter which carries the prepared reels to an unwind station.

3,695,533

CRADLE

Albert T. Shedyak, Spencer, Mass., assignor to Curtis & Marble Machine Company, Worcester, Mass.

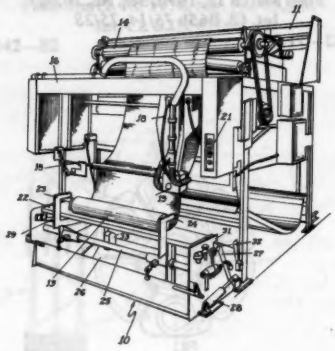
Filed Nov. 5, 1970, Ser. No. 87,087

Int. Cl. B65h *75/02*

U.S. Cl. 242—55 6 Claims

This invention has to do with a cradle for use with rolls of flexible material, such as fabric, and, more particularly, to a

cradle for use in the textile industry for use at the entrance to a scray, the cradle having a table which is tiltable to cause the



roll to fall into a trough, after which a guide bar is moved into contact with the material leaving the roll.

3,695,534

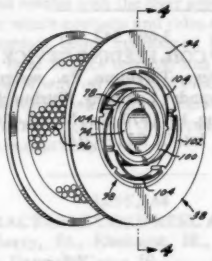
FILM FEED MECHANISM

John C. Treise, 10436 Ruffner Ave., Granada Hills, Calif.

Filed March 9, 1970, Ser. No. 17,376

Int. Cl. B65h *75/00*

U.S. Cl. 242—55.01 **2 Claims**



In a film transport system employed for automatic motion picture film processing, film feed spools or rollers which are spring mounted to the hub portions thereof so as to be deflectable in response to increased film tension into peripheral driving engagement with a resilient overdrive roller. The film feed spools have a central, tubular core or hub adapted to be mounted on a shaft, an inner roller body ball-bearing mounted on the hub for free rolling movement, and an outer roller body against which the film rides which is supported on the inner roller body by annular spring units comprising at least five relatively short and stiff arcuate leaf springs disposed in regularly spaced relationship, the leaf springs being arranged for radial deflection relative to the axis of the roller to permit shifting of the roller into engagement with the resilient drive roller, but being resistant to torsional displacement or "windup" so that when film tension is relaxed, release from the drive roller is substantially instantaneous, involving substantially only translational movement of the outer feed roller body relative to the drive roller and not requiring a combination of both rotational unwinding movement and translational movement.

3,695,535

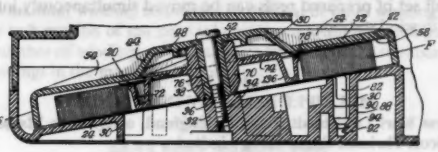
FILM FEEDING DEVICE

George J. Zahradnik, Wheaton, and Mel E. Maurer, Glenview, both of Ill., assignors to Elco Corporation, Jenkintown, Pa.

Filed May 27, 1970, Ser. No. 40,820

Int. Cl. B65h *17/48*

U.S. Cl. 242—55.19 A **3 Claims**



A film cartridge designed to carry on endless film which, when inserted in a movie projector, provides a film drive system for feeding the inner ends of the film's spiral roll into a film guide passageway that directs the film towards a film gate. The film drive system frictionally drives the spiral roll by using a disc member having an annular rim portion about which the spiral roll of film is disposed and having two spaced stationary support surfaces to loosely contain the spiral roll. The inner end of the spiral roll is pushed off the annular rim portion and pushed towards the film gate by driving the disc member at a constant speed such that the film is fed at a greater rate than can be accommodated by the film picker mechanism of the movie projector to provide intermittently a compensated loop of film in the film guide passageway and thereby provide a constant supply of film for the film picker mechanism as it advances the film frame by frame to the film gate.

3,695,536

Patent Not Issued For This Number

3,695,537

Patent Not Issued For This Number

3,695,538

MEANS FOR UNWINDING REELS OF SHEET MATERIAL

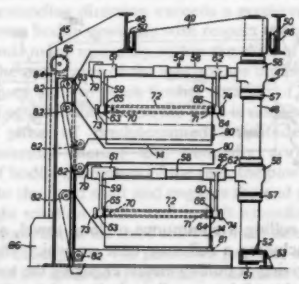
Horst Karl Lindstaedt, London, England, assignor to Masson Scott Thrissell Engineering Limited

Filed July 2, 1970, Ser. No. 51,838

Claims priority, application Great Britain, July 5, 1969, 33,985/69

Int. Cl. B65h *19/30*

U.S. Cl. 242—58.6 **7 Claims**



An unwind stand, for unwinding webs of sheet materials such as paper or thin board from large and heavy reels for subsequent processing, wherein a pair of shaftless heads are ar-

ranged to engage opposite ends of a reel, both heads being connected to a common alignment arm so as to be capable of swinging or pivoting about an axis transverse to the length of the alignment arm, for adjusting the reel to allow the web to run true. The alignment arm is supported as a cantilever from one end and is mounted on a transporter capable of moving in a direction parallel to the direction of web run-off between an unwind station and a reel preparation station. Two or more pairs of shaftless heads are mounted on the transporter so that a full set of prepared reels can be moved simultaneously into the unwind station.

3,695,539

MULTIPLE REEL UNWIND STANDS

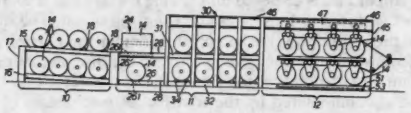
Horst Karl Lindstaedt, London, England, assignor to Masson Scott Thrissell Engineering Limited

Filed July 2, 1970, Ser. No. 51,839

Claims priority, application Great Britain, July 5, 1969, 33,986/69

Int. Cl. B65h *19/30*

U.S. Cl. 242—58.6 **5 Claims**



An unwind stand, for unwinding multiple webs of sheet materials such as paper or thin board simultaneously from a plurality of large and heavy reels, in which the reels are mounted for the unwinding operation in a single set of pairs of shaftless heads which correspond in number to the reels, and a transporter or conveyor is provided for moving the reels from a reel preparation station to the unwind station. The shaftless heads may be stationarily mounted on the transporter or conveyor, which moves in the direction of web run-off, e.g., back and forth or in a closed loop. The shaftless heads are preferably mounted on cantilever supports pivotable about a vertical axis for squaring adjustment of the reels.

3,695,540

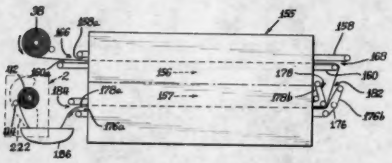
LAUNDRY TOWEL ROLLING MEANS

Paulette Grantham, 1830 White Oak Drive, Menlo Park, Calif.

Continuation-in-part of Ser. No. 510,596, Nov. 30, 1965, abandoned. This application Oct. 19, 1970, Ser. No. 81,671

Int. Cl. B65h *17/20, 75/24*

U.S. Cl. 242—65 **7 Claims**



Means for rolling a continuous or long towel, after being laundered, including a roller or core on which the towel is rolled, and driving or pulling means engaging the towel on the roller and working it into a roll, including a laterally shiftable unit having side plates engaging the sides of the towel and the ends of the roll, the unit shifting so as to accommodate the inherent weaving or lateral shifting movements of the towel and thereby to form an even-end roll.

3,695,541

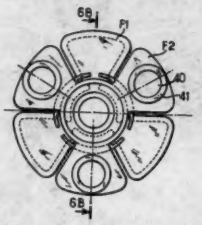
APPARATUS FOR THE RECEIVING, STORING AND RESTITUTION OF RECORDING TAPES

Elsie Chang Lee, Phoenix, Ariz., assignor to Societe Industrielle Bull-General Electric (Societe anonyme), Paris, France

Filed March 18, 1970, Ser. No. 20,569

Int. Cl. B65h *75/14, 75/28*

U.S. Cl. 242—71.8 **1 Claim**



A recording tape receiving, storing, and supplying device for use with a computer terminal having a tape punch and a tape reader, wherein a first tape storage reel is disposed to receive recorded tape emerging from either the punch or the reader, and a second tape storage reel is disposed to receive andinvert tape from the first reel and to supply recorded ed tape to the reader, andwherein each of these reels includes a hub for grasping one end of the tape stored thereon and a pair of flanges, each of the flanges consisting of a plurality of blades spaced apart around the periphery of the hub, the blades of one flange of each reel being provided with recesses to receive the tip of a finger for revolving the reel.

3,695,542

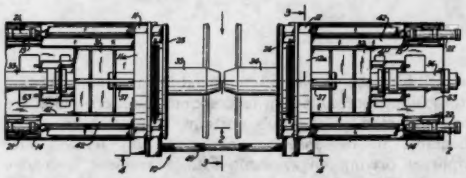
STRIP COIL FEEDING DEVICE

Albert Theodore Briggs, Tarentum, Pa., assignor to United Engineering and Foundry Company, Pittsburgh, Pa.

Filed Aug. 10, 1970, Ser. No. 62,476

Int. Cl. B21c *47/16*

U.S. Cl. 242—78.6 **9 Claims**



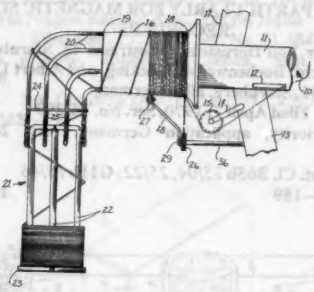
The disclosure of this invention relates to a combined uncoiler-coil device employed in the rolling mill industry for feeding coils of metalic strip to the mill. The uncoiler-coil box disclosed includes a pair of cooperative but independently moving opposed mandrels and disks, the mandrels passing into the opening of tight coils for rotatably supporting and feeding them to the mill, while the disks are caused to engage the sides of loose coils to restrain the coils while being fed to the mill by a pair of driven rotatable rollers arranged between the disks and below the coil. The device also includes a single equalizing screw shaft mechanization for the disks which controls the opposed movement thereof.

3,695,543

MEANS FOR REGULATING THE ESCAPE OF WIRE FROM A DEAD BLOCK ONTO AN ACCUMULATOR

Marvin L. Stark, Lexington, Mo., assignor to Armco Steel Corporation, Middletown, Ohio

Filed March 16, 1970, Ser. No. 19,846
Int. Cl. B21c 47/10
U.S. Cl. 242—82 2 Claims



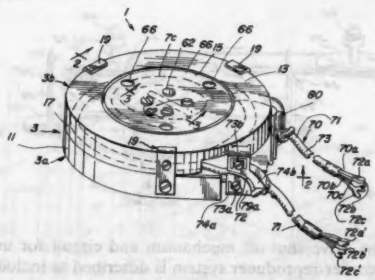
A wire receiving mechanism receives wire from any line wherein it is desired to accumulate such wire in coils for any further purpose. The wire so received may come from a wire drawing machine, a high carbon finished spring wire apparatus, a continuous wire coating set-up or any other source. The wire may be accumulated in neat coils for delivery to the customer, for storage, for transfer to another operating station or for any other reason. The receiving mechanism comprises a rotating shaft which carries with it a flyer arm to which is mounted a roller system for placing successive rings of wire onto a non-rotating, dead block. A pay-off assembly is mounted on and rotates with the flyer arm. The assembly may include a roller which contacts and rides on the surface of the dead block, contact being maintained by use of a torsion spring. As the flyer rotates through one revolution, thereby placing one ring of wire on the dead block, the pay-off roller also makes one revolution, thereby allowing one ring of wire to pay off the dead block onto the apparatus which accumulates such wire in neat coils.

3,695,544

RETRACTABLE CORD REEL ASSEMBLY

William J. Morey, Sr., Elmhurst, Ill., assignor to Morey Corporation, Downers Grove, Ill.

Filed Oct. 5, 1970, Ser. No. 78,055
Int. Cl. B65h 75/48
U.S. Cl. 242—107 R 7 Claims



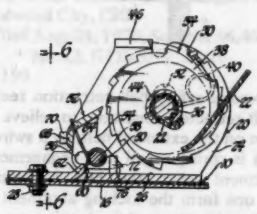
A reel body rotatably supported on a frame and spring-urged into a given reference position includes a main peripheral cord storage compartment having an axial and radial extent each equal to a number of cord thicknesses, a cord take-up compartment positioned alongside said main cord storage compartment and having an axial extent of only about one cord thickness. The main cord storage and cord take-up compartments respectively having hub portions around which different portions of the same cord are wound initially in the same direction, the ub portion of the main cord storage compartment being positioned substantially outwardly of the hub portion of the cord take-up compartment. The cord wound around the hub portion of the main cord storage compartment has an inner winding connected to the first or inner winding on the hub portion of the cord take-up compartment which joins a number of windings which is only a fraction of the number of windings in the main cord storage compartment.

3,695,545

SEAT BELT RETRACTOR

Theodore F. Peters, Utica, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed July 10, 1970, Ser. No. 53,740
Int. Cl. A62b 35/00
U.S. Cl. 242—107.4 5 Claims



A seat belt retractor includes a U-shaped support having generally vertically disposed closed end slots in the side walls thereof. A reel having ratchet toothed end plates and a shaft mounts a seat belt. The ends of the shaft are received within the slots of the support walls and torsion springs bias the shaft ends into engagement with the lower ends of the slots. The reel is spring biased in a belt retracting direction. A fixed shaft extends between the side walls of the support. A pawl includes closed end slots in the side walls thereof receiving the shaft for various modes of movement of the pawl relative to the shaft. In one mode of movement the pawl shifts bodily with respect to the shaft. In a mode of movement, the pawl pivots with respect to the shaft about an axis normal to the shaft axis and located adjacent one end of the pawl. In a third mode of movement, the pawl rotates about the axis of the fixed shaft. A spring normally locates the pawl in spaced parallel relationship to the toothed end plates of the reel and with the slots in the pawl side walls having one end thereof in engagement with the fixed shaft. When belt acceleration or movement of the belt in an extending direction exceeds a predetermined rate, the reel moves bodily upwardly with respect to the support as the shaft ends move upwardly within the slots of the support walls and the end plates of the reel engage cooperating teeth on the support walls to block further rotation of the reel in a belt extending direction. When the pawl is subjected to an acceleration pulse of predetermined amplitude and time directed laterally thereof and generally normal to the direction of bodily movement of the reel, the pawl shifts bodily relative to the fixed shaft and engages the end plates of the reel. A slight rotation of the reel in belt extending direction rotates the pawl about the fixed shaft until the side walls of the pawl engage the support. The pawl then provides a fulcrum for movement of the reel bodily upwardly so that the end plates of the reel engage the cooperating teeth on the support walls. When the pawl is subjected to an acceleration pulse of predetermined amplitude and time directed generally longitudinally thereof, the pawl pivots about one end thereof with respect to the fixed shaft so that the other end of the pawl en-

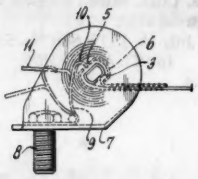
gages the ratchet plates of the reel and provides a fulcrum for movement of the reel bodily upwardly after slight rotation of the reel in a belt extending direction rotates the pawl to engage the side plate of the other end of the pawl with the support.

3,695,546

SAFETY BELT RETRACTOR REEL LOCKING MECHANISM

Takezo Takada, Hikone, Japan, assignor to Takata Kojyo Co., Ltd., Tokyo, Japan

Filed Dec. 2, 1970, Ser. No. 94,375
Int. Cl. A62b *35/00*
U.S. Cl. 242—107.4 **7 Claims**



A spring rewound safety belt retraction reel is releasably locked in a belt retracted condition, to relieve the spring rewinding tension on the extended belt, by a swingable latching member which is spring urged into engagement with a reel mounted abutment when the belt is partially or fully withdrawn. In one form the locking abutment is covered by the wound belt and is exposed for locking engagement when the belt is fully withdrawn and in another form the abutment is located on the reel flange and the latching member is held by the wound belt out of locking engagement with the abutment until the belt is at least partially withdrawn. A selectively manipulated member is connected to the locking member to facilitate its release.

3,695,547

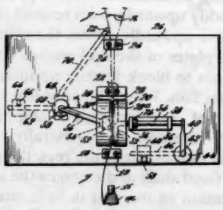
Patent Not Issued For This Number

3,695,548

TENSIONING DEVICE FOR YARN PACKAGING MACHINERY

Samuel L. Abbott, Wilton, N.H., assignor to Abbotts Machine Co., Inc., Wilton, N.H.

Filed Jan. 8, 1970, Ser. No. 1,423
Int. Cl. B65h *59/24*
U.S. Cl. 242—150 **2 Claims**



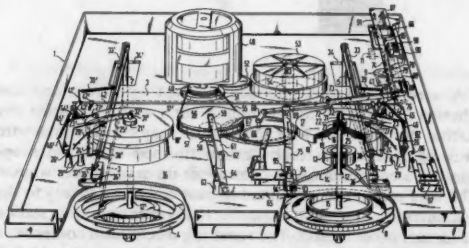
In a yarn packaging machine tension discs between which the yarn travels on its way to be wound to form a yarn package, one at least of the discs being supported for movement toward the other to enable varying the pressure which may be applied to the running yarn, thereby to increase or decrease the frictional resistance to movement between the discs, a lever arm connected to the movable disc adapted to support an adjustable weight by means of which the pressure of the one disc against the other may be adjusted and a second lever arm connected thereto, said second lever arm having a part situated in the path of the running yarn operable by a lateral displacement of the running yarn to increase or decrease the pressure applied by the weight.

3,695,549

TAPE TENSION CONTROL MEANS WITH SENSING LEVERS, PARTICULARLY FOR MAGNETIC SOUND RECORDERS

Wolf Freiherr Von Hornstein, Ottostrasse 4a, Starnberg; Hubert O. Richt, Buchenweg 4, Soecking, and Albert Liebl, Am Muhleich 12, Starnberg, all of Germany

Filed April 7, 1970, Ser. No. 26,299
Claims priority, application Germany, Aug. 24, 1967, P 15 49 041.2
Int. Cl. B65h *25/04, 25/22;* **G11b** *15/46*
U.S. Cl. 242—189 **10 Claims**



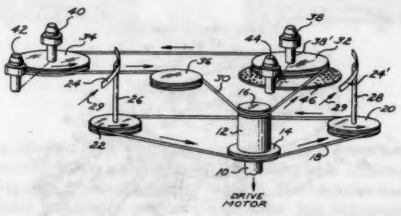
A drive for a tape recorder by means of which a recording tape can be fed from a storage reel to a take-up reel or vice versa at different speeds corresponding to the operating functions 'normal operation', 'rapid wind' and 'rapid re-wind.' The tape runs over two tension sensers associated with the storage and take-up reels. The sensers set the tension in the tape to different values for the different operating functions, the tension being changed by springs associated with the sensers. The movement of the sensers is transmitted to variable friction clutches associated with the take-up and storage plates.

3,695,550

TAPE DRIVE SHUT-OFF

Thomas M. Lennox, Mentor, Ohio, assignor to Scanfax Systems Corporation, New York, N.Y.

Filed May 20, 1970, Ser. No. 39,013
Int. Cl. B65h *25/32, 25/10;* **G11b** *15/54*
U.S. Cl. 242—191 **5 Claims**



A tape drive shut-off mechanism and circuit for use in a tape recorder-reproducer system is described as including, in cooperation with means for reproducing the audio information from a master tape onto a "slave" tape, a mechanism for sensing the completion of the winding of the master tape from its feed spindle to its take-up spindle. Also disclosed is a means for acquiring a signal from the aforementioned mechanism in

response to the completion of winding and the use of such a signal in terminating the operation of a common drive motor for both the master tape and the "slave" tape. In this way, the "slave" tape winding is terminated in response to the termination of winding of the master tape.

3,695,551

FILM WINDING DEVICE FOR MOTION-PICTURE CAMERAS

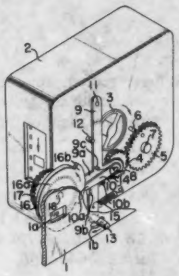
Yozo Iida, and Hideyo Nozawa, both of Tokyo, Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed Sept. 11, 1970, Ser. No. 71,484

Claims priority, application Japan, Sept. 16, 1969, 44/72748

Int. Cl. G03b *1/04*; G11b *15/32, 23/04*

U.S. Cl. 242—194 **10 Claims**



A film winding device for motion-picture cameras has a film counter and a signal means located in the film counter corresponding to the graduated scales of the film counter to signal when only a small length of the film from the leading or trailing ends of the film, respectively, is contained on the take-up or supply chambers in the magazine. Power transmission means is provided for transmitting the rotation of the drive means to the take-up spool in the film magazine and includes means for stopping rotation of the take-up spool which is responsive to the signal means.

3,695,552

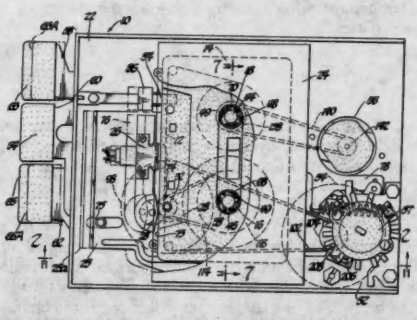
TAPE TRANSPORT ASSEMBLY FOR CASSETTE TAPE PLAYERS HAVING FAST FORWARD AND FAST REVERSE MODES

James H. Guyton, and Arthur R. Lammers, both of Kokomo, Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed June 7, 1971, Ser. No. 150,571

Int. Cl. G03b *1/04*; G11b *15/32, 23/04*

U.S. Cl. 242—198 **3 Claims**



A tape transport assembly for cassette tape players having a capstan drive and also takeup and supply spindles for receiving a pair of tape carrying reels contained in a cassette cartridge wherein both the takeup and supply spindles are axially shiftable between forward and reverse drive positions. In the forward drive position, the takeup spindle drives one of the reels in a tape play direction during both a tape play mode and a fast forward mode. In the reverse drive position, the supply spindle drives the other reel in an opposite direction to effect a fast reverse mode. Forward and reverse drive sources rotate the spindles in opposite directions. A tape advance slide assembly is manually operable to initiate the fast forward mode by releasing the tape from engagement with the capstan drive. A tape reverse slide assembly is manually operable to initiate the fast reverse mode by concurrently shifting the spindles from the forward drive position to the reverse drive position, releasing the tape from the capstan drive, and activating the reverse drive source.

3,695,553

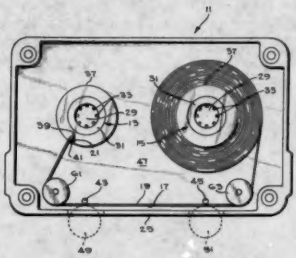
CASSETTE TAPE ASSEMBLY

Thomas David Everett, Lombard, Ill., assignor to Ampex Corporation, Redwood City, Calif.

Filed Aug. 24, 1970, Ser. No. 66,402

Int. Cl. G11b *5/72, 23/10*

U.S. Cl. 242—199 **2 Claims**



By adhering a reinforcing strip to each end of a magnetic tape and attaching these reinforced tape ends to supply and take-up reels in a cassette housing, the use of special leaders and the splicing thereof to the tape ends has been eliminated. The reinforced tape ends are of sufficient length to extend from its associated reel, when emptied, across the front of the cassette housing to a capstan receiving opening to reinforce the tape against breakage due to wear by the capstan and preferably to and about the outer convolution of tape on the other reel to aid in withstanding tensile forces.

3,695,554

NUTATION DAMPING IN DUAL-SPIN SPACECRAFT

Kevin John Phillips, Hightstown, N.J., assignor to RCA Corporation, New York, N.Y.

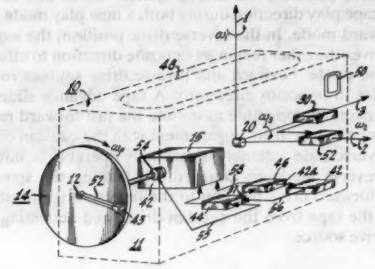
Filed Oct. 16, 1970, Ser. No. 81,450

Int. Cl. B64c

U.S. Cl. 244—15 A **11 Claims**

A dual-spin spacecraft having a de-spun platform is arranged to vary the torque on the stabilizing wheel by means of a motor whose speed is varied in accordance with a signal representing nutation motion to damp or attenuate the nuta-

tion motion substantially to zero very rapidly. By arranging the mass distribution such that significant cross products of inertia exist, the effects of such products are utilized in a closed loop control system to effect the desired attenuation or damping.

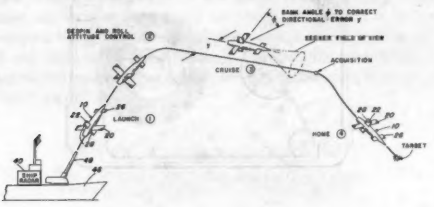


3,695,555

GUN-LAUNCHED GLIDE VEHICLE WITH A MID-COURSE AND TERMINAL GUIDANCE CONTROL SYSTEM

William R. Chadwick, Dukinfield, England, assignor to The United States of America as represented by the Secretary of the Navy

Filed June 12, 1970, Ser. No. 45,736
Int. Cl. F41g *7/14, 7/06;* **F11g** *9/00*
U.S. Cl. 244—3.14 **9 Claims**



The system comprises an eight-inch full-bore glide vehicle having retractable aerodynamic lifting surfaces which increase range performance and accuracy. The glide vehicle can be fired to a maximum range of 135 miles without guidance or to a range of 100 miles with accurate terminal guidance. An infrared horizon scanner provides feedback information to small bang-bang servo-operated roll-tabs for vehicle despin and roll-attitude stabilization. Target acquisition occurs from the glide path with ship-based radar providing information for mid-course lateral guidance control. A forward observer illuminates the target with laser energy and the vehicle homes in on the target using bang-bang monoplane control.

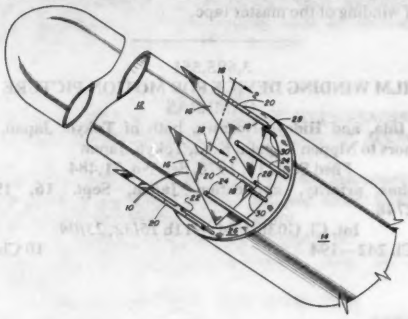
3,695,556

HINGED STABILITY AND CONTROL FIN ASSEMBLY

Harry J. Gauzza, Silver Spring, and Eugene V. Horanoff, Clarksville, both of Md., assignors to The United States of America as represented by the Secretary of the Navy

Filed Aug. 3, 1970, Ser. No. 60,475
Int. Cl. F42b *13/24, 15/16*
U.S. Cl. 244—3.29 **3 Claims**

A hinged fin assembly for an ordnance vehicle wherein each fin is pivotally mounted for rotational movement about two mutually perpendicular axes. Upon separation of a booster motor from the vehicle, a fin holding mechanism disengages from the fins to permit resilient biasing springs to pivot the fins about axes parallel to the longitudinal axis of the vehicle from a folded position to an erected position and to be locked in the erected position. When erected, the fins are controllably rotated about axes perpendicular to the vehicle's longitudinal axis to directionally control the flight of the vehicle.

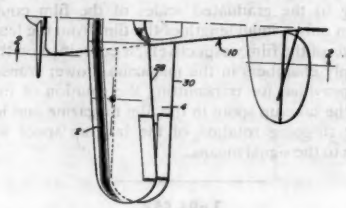


3,695,557

BIPLANE CONSTRUCTION

Curtis H. Pitts, P.O. Box 548, Homestead, Fla.

Filed Aug. 28, 1970, Ser. No. 67,847
Int. Cl. B64c *3/06*
U.S. Cl. 244—45 R **4 Claims**



The design of the wings of a biplane wherein the inverted flight characteristics are more nearly equal to normal flight characteristics by use of essentially symmetrical airfoils which have substantially the same relationships between lift and angle of attack inverted as they do right side up. This invention achieves desired stability characteristics in the pitching mode both inverted and right side up by properly designing an essentially symmetrical airfoil forward wing having different aerodynamic characteristics from the essentially symmetrical airfoil rearward wing thereby attaining the desirable flight characteristics.

3,695,558

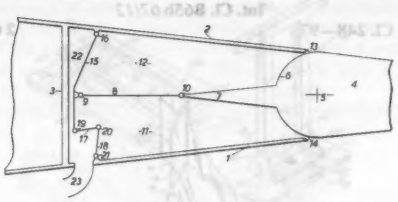
AIRCRAFT

David Milwain McRae, and Andrew Douglas Watt, both of Hatfield, England, assignors to Hawker Siddeley Aviation Limited, Kingston-upon-Thames, Surrey, England

Filed May 18, 1970, Ser. No. 37,972
Int. Cl. B64c *13/16, 9/30*
U.S. Cl. 244—83 D **8 Claims**

An arrangement for the aerodynamic balancing of aircraft control surfaces in which the control surface has forward extension into a chamber within the airframe. This forward extension is coupled to a diaphragm which spans the chamber in a fore-and-aft direction and is in substantial sealing relationship with the fore-and-aft walls of the chamber. The

diaphragm moves laterally with movement of the control surface, and the chamber is thereby effectively partitioned into



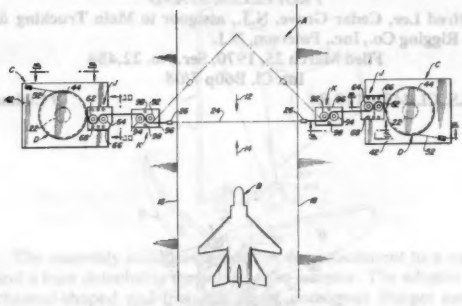
two variable volume spaces to which are admitted the respective external pressures at opposite sides of the control surface.

3,695,559

AIRCRAFT ARRESTING APPARATUS

Robert W. Cruger, Springfield, and Floyd G. Silver, Wallingford, both of Pa., assignors to Gulf & Western Industrial Products Company, Grand Rapids, Mich.

Filed May 20, 1970, Ser. No. 39,047
Int. Cl. B64f *1/02*
U.S. Cl. 244—110 C **12 Claims**



An aircraft arresting apparatus includes a pair of rotatable reels mounted on vertical axes on opposite sides of an aircraft runway. Flat elongated fabric tapes are wound upon the reels in layer-by-layer convolutions. The free ends of the tapes are connected with a pendant which is stretched in tension across the runway. Lead-off sheave means are located closely adjacent each reel and the tapes are guided over the lead-off sheave means. Each lead-off sheave means is arranged so that each tape is in contact with a lead-off sheave means over a sufficient angle of wrap to reflect any lateral or vertical tape wave motions and prevent them from going past the lead-off sheave means toward the reels.

3,695,560

Patent Not Issued For This Number

3,695,561

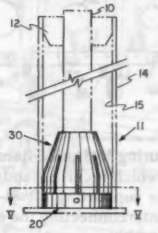
TEXTILE PACKAGE ADAPTOR

Bobby L. Pitts, Route 1, Wellford, S.C.

Filed Oct. 19, 1970, Ser. No. 81,921
Int. Cl. B65h *75/30, 79/00*
U.S. Cl. 242—46.4 **12 Claims**

An adaptor for a textile package is disclosed. The present adaptor is positioned over a spindle on a textile machine and receives a tube around which textile yarn is to wrapped. Initially, the tube is very lightly held by the adaptor, but when the spindle begins to rotate, the adaptor is driven and a portion thereof expands against the inside wall of the tube to hold same tightly and to expand the tube very slightly. At the appropriate time for doffing or removal of the tube from the spindle, the spindle ceases to rotate and the adaptor assumes or is easily adjustable to a non-driving position whereby the fit between the adaptor and the tube is again only very slight so as to permit the tube to be easily removed therefrom.

A preferred form of the adaptor is a collar that is received



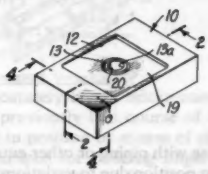
around and secured to the spindle. The collar has an intermediate portion thereof in the shape of a multi-sided figure such as, for example, an octagon and a top portion thereof that defines a lip. A second component of the preferred adaptor is a package engaging member which resides over the collar and snap fits thereto at the lip. The package engaging member has a series of slots therearound, the number of slots corresponding to the number of edges on the multi-sided figure and defining fingers therebetween. The fingers between the slots are resilient and expand to tightly engage the tube therearound when contact by the driving edges of the collar.

3,695,562

ADJUSTABLE SUPPORT

Cecil A. Daniel, 2006 Calle Cantara, El Cajon, Calif.

Filed Aug. 26, 1970, Ser. No. 66,993
Int. Cl. F16m *5/00*
U.S. Cl. 248—23 **8 Claims**



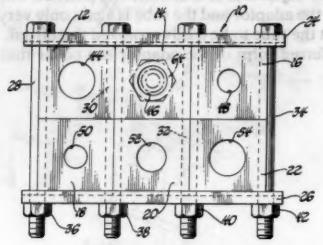
An adjustable support for mounting machinery or equipment. A housing has a ball enclosure with an open top, over which a support platform is mounted for universal tilting movement on a central post. The platform is supported by a large number of loose balls held within the ball enclosure. The load being supported exerts downward pressure on the platform to shift the balls and permit the platform to adjust to any desired angle. The height of the platform is adjusted by adding to or subtracting from the supply of balls within the ball enclosure by screw threaded operation of pusher blocks in a pair of ball storage chambers connected to the corners of the ball enclosure.

3,695,563

HYDRAULIC LINE FITTING SUPPORT APPARATUS

Theodore D. Evans, 15134 29 Mile Road, Romeo, Mich.

Filed June 1, 1970, Ser. No. 42,201
Int. Cl. F16l 5/00
U.S. Cl. 248—56 **1 Claim**



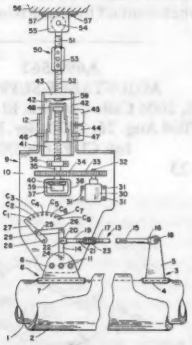
Apparatus for securing hydraulic lines and the like including bulkhead plates which receive standard hydraulic fittings, channel members for supporting a two-dimensional array of plates and bolts for interconnecting the channel members and plates into a rigid assembly.

3,695,564

THERMO-ELECTROMECHANICAL MULTI-FUNCTION SUPPORT DEVICE

Leonard S. Suozzo, 366 Maple Hill Drive, Hackensack, N.J.

Continuation-in-part of Ser. No. 807,048, March 13, 1969, Pat. No. 3,539,136. This application Aug. 17, 1970, Ser. No. 64,320
Int. Cl. F16l 3/20
U.S. Cl. 248—59 **3 Claims**



A device for use with piping or other equipment that is subject to changes in position due to variations in its thermal condition. The device comprises actuating means, which is secured to the piping at spaced first and second locations and is movable relative to the piping in response and in direct proportion to expansion or contraction resulting from said variations in thermal condition, and coupling means. The actuating means includes a rigid member connected at one end to the piping at the first location and a lever pivotally connected to the piping at the second location and to the other end of the rigid member. The coupling means is variable in effective length and is connected at one end to the lever and at its other end to a stationary support. The coupling means includes an electric motor which is cooperatively associated with the lever. The parts are so constructed and arranged that increments of movement of the actuating means cause corresponding variations in the effective length of the coupling means.

3,695,565

PLASTIC GARBAGE BAG HOLDER AND SEALER

John Hodges, 556 Hamilton Road, London, Ontario, Canada

Filed Oct. 12, 1970, Ser. No. 80,065
Int. Cl. B65b 67/12
U.S. Cl. 248—97 **2 Claims**

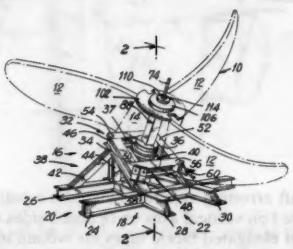
A holder for plastic garbage bags is disclosed. The holder is capable of constantly holding the mouth of the bag in "open" position by its resistance friction but capable of permitting the bag to be disposed such that the mouth appears to be displayed in open configuration and optionally in closed configuration even though the mouth remains open.

3,695,566

PROPELLER STAND

Alfred Lee, Cedar Grove, N.J., assignor to Main Trucking & Rigging Co., Inc., Paterson, N.J.

Filed March 25, 1970, Ser. No. 22,484
Int. Cl. B60p 7/08
U.S. Cl. 248—119 R **9 Claims**



A propeller stand for hauling ship and airplane propellers. The stand includes a horizontally disposed base member with an inclined platform attached thereto. A draw bar is threaded through a selected spacer assembly, selected in accordance with the dimensions of the propeller and the propeller is loaded onto the platform and spacer assembly. The draw bar is then firmly secured in position with a bearing plate abutting the propeller firmly holding it in position.

3,695,567

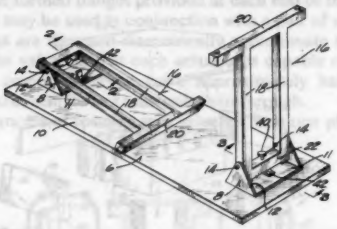
FOLDING TABLE LEG

James A. Weagle, Tupelo, Mich., assignor to Krueger Metal Products, Inc., Green Bay, Wis.

Filed Oct. 21, 1970, Ser. No. 82,745
Int. Cl. A17b 3/00; F16m 11/38
U.S. Cl. 248—188.6 **5 Claims**

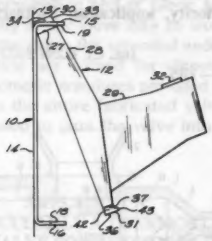
Each of two folding leg standards constituting supports for a table is pivoted to its own bracket on the under side of the table and folds between upright and generally horizontal positions. A stop connected to the bracket defines the upright position while at the same time a dog slidable in a portion of

the standard becomes engaged with a detent to hold the standard erect. When it is desired to fold the standard against the



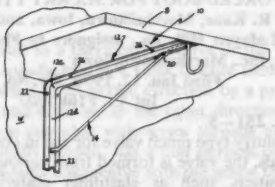
table, a single handle connected with the dog retracts the dog against pressure of a spring to release it from the detent.

3,695,568
WALL BRACKET BASE ASSEMBLY
Herbert C. Hogrebe, St. Louis, Mo., assignor to Dazor Manufacturing Corp., St. Louis, Mo.
Filed July 24, 1970, Ser. No. 58,105
Int. Cl. F16m *13/00*
U.S. Cl. 248—223 **5 Claims**



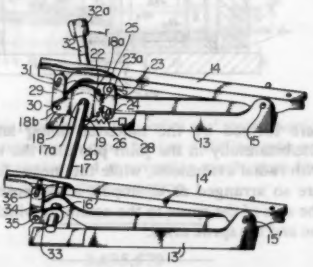
The assembly includes an adaptor for attachment to a wall and a base detachably mounted to the adaptor. The adaptor is channel-shaped and includes upper and lower flanges each having an aperture. The base includes an upper end received within the upper aperture and a lower end seated upon the lower flange adjacent the lower aperture. The base also includes upper and lower shoulder portions engageable with associated abutment portions on the adaptor to preclude rotation of the base relative to the adaptor in directions both parallel and transverse to the wall.

3,695,569
BRACKET CONSTRUCTION
Ronald C. Pullan, Grand Rapids, Mich., assignor to Knape & Vogt Manufacturing Company, Grand Rapids, Mich.
Filed May 14, 1970, Ser. No. 37,180
Int. Cl. A47b *96/06*
U.S. Cl. 248—235 **2 Claims**



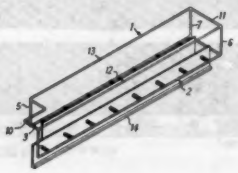
A versatile, collapsible shelf bracket having a separable compressive diagonal brace interconnected with the bracket in a special manner providing lateral stability and enabling the brace to form a special added end support, the load placed thereon being supported on the bracket upper leg.

3,695,570
ADJUSTABLE RECLINING SEAT
Hideo Ishida, Tokyo, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan; Fuji Kiko Company, and Ikedo Bussan Company, Limited, Yokohama, Japan
Filed Oct. 19, 1970, Ser. No. 81,806
Claims priority, application Japan, Oct. 22, 1969, 44/100103
Int. Cl. B60n *1/02*
U.S. Cl. 248—397 **3 Claims**



An adjustable reclining seat for major use in a motor vehicle, comprising a seat structure and support structure carrying the seat structure, the support structure including a latch mechanism which is adapted to finely adjust the tilting angle of the seat structure through manipulation of a lever which is manually operated.

3,695,571
BRICKLAYING DEVICES
David Preiskel, 27 Aylestone Ave., London, N.W. 6, England
Filed June 16, 1970, Ser. No. 46,788
Claims priority, application Great Britain, June 18, 1969, 30,935/69
Int. Cl. B29c *11/00*
U.S. Cl. 249—53 **13 Claims**

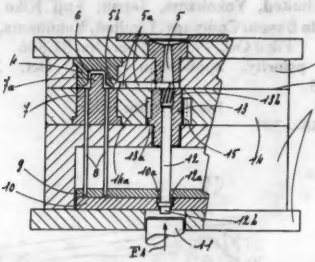


A device for accurately laying bricks comprising a frame positionable on a previously laid course of bricks or a wall base, a maintained in position by means of clamping devices. The device may be used for building single or cavity walls. Means are provided on the device for ensuring accurate positioning of the bricks in the horizontal and vertical planes, and for pointing the horizontal and vertical joints between the bricks.

3,695,572
AUTOMATIC MOLD FOR PARTS OF PLASTIC MATERIAL
Jean Jullien-Davin, Valence, France, assignor to Crouzet, Paris, France
Filed July 22, 1970, Ser. No. 57,135
Claims priority, application France, July 29, 1969, 6925993
Int. Cl. B28b *7/10*
U.S. Cl. 249—68 **3 Claims**

A mold for objects of plastic material in which a main injection passage has separate passages extending radially

therefrom and which open into the mold cavities, and in which a mechanical element sweeps the space located above the ejectors when the mold is open so that the molded parts which may have remained attached to the ejectors are caused to fall, the said mechanical sweeping element being constituted by the sprue formed by the material which fills the injection and



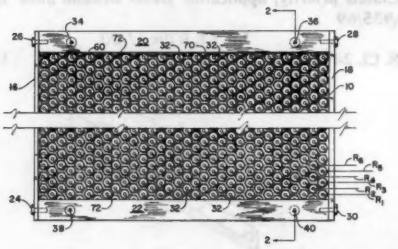
which are formed by the material filling lateral passages located substantially in the joint plane of the mold and provided with radial extensions, while the means for ejecting the sprue are so arranged as to impart a movement of rotation about the axis of the sprue to the assembly which is formed by the sprue and the sprue arms.

3,695,573

CASTING MOLD FOR FABRICATING A FLEXIBLE PRODUCT

James E. Huffaker, Kingsport, Tenn.; Ernest L. Myers, Hilton, Va.; Brian D. Dillon, and Cecil W. Dolen, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed June 1, 1970, Ser. No. 42,106
Int. Cl. B28b 7/16
U.S. Cl. 249—142 **4 Claims**



A mold for casting solidifiable materials and method of fabricating a continuous belt from molded sections is disclosed. In the mold, a plurality of apertures are provided in a special pattern, each of which is adapted to receive a core member. The core members are easily removable. Removable end plates are provided which enable the pattern to be continued to the very edge of the mold. A continuous belt mold is fabricated by butting and connecting edges of molded sections.

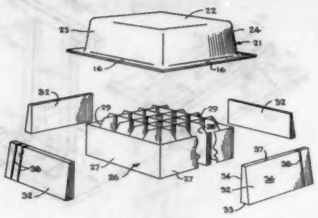
3,695,574

CONCRETE PAN FORMS

J. Edson Charlier, 1231 Jersey St., Denver, Colo., and Elmer H. Schell, 3451 W. 94th St., Westminster, Colo.

Filed Sept. 9, 1970, Ser. No. 70,708
Int. Cl. B28b 7/28
U.S. Cl. 249—175 **2 Claims**

A pan construction for concrete forming operations in which a mold formed and nestable skin or cover of pliable material that would otherwise be distorted by the weight of concrete being poured is maintained in place above form supports by a cellular core structure that may itself be shipped



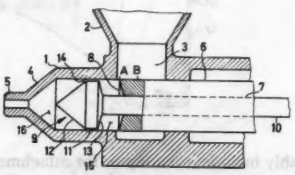
and handled in a compact relation. Wedge elements provide support for side walls of said pan cover. Core and pan removal are facilitated by use of materials having inherent or cooperative lubricity characteristics.

3,695,575

INJECTION MOLDING MACHINE HAVING A PLASTICIZING PLUNGER

Rudolf Martin Hauser, Zurich, Switzerland, assignor to Bucher-Guyer AG Maschinenfabrik, Niederweningen, Zurich, Switzerland

Filed June 16, 1970, Ser. No. 46,787
Claims priority, application Switzerland, June 18, 1969, 9335/69
Int. Cl. B29f 3/02
U.S. Cl. 259—185 **8 Claims**



An injection molding machine for processing plasticizable plastics material comprises an injection cylinder opening into an injection nozzle, and a plasticizing plunger movable in the injection cylinder towards and away from the injection nozzle. A constricted passage is provided between the plasticizing plunger and the internal wall of the injection cylinder. At the rear of the plasticizing plunger a filling plunger is provided in the injection cylinder and arranged to effect a pulsating reciprocatory movement in the injection cylinder in the range of a hopper discharge opening into the cylinder for supplying granular plastics material into the cylinder. The plasticizing plunger is provided with a plunger rod which is slidingly mounted in a coaxial bore of the filling plunger.

3,695,576

REINFORCED BOOT FOR SLURRY TYPE PINCH VALVE

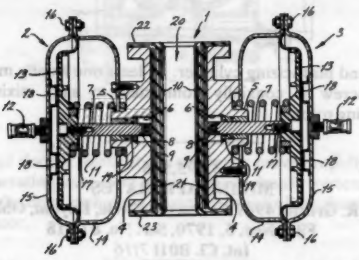
Robert R. Kane, Marshalltown, Iowa, and Charles J. Glaser, Jr., Lafayett Hill, Pa., assignors to Fisher Controls Company, Inc., Marshalltown, Iowa

Filed Jan. 12, 1970, Ser. No. 2,076
Int. Cl. F16k 7/07
U.S. Cl. 251—5 **8 Claims**

In a slurry type pinch valve for use in controlling the flow of materials, the valve is formed from various plies of a resilient composition, such as elastomer material, and embedded within the plies of said composition are one or more plies of fabric which contains reinforcing cords that are arranged approximately parallel within each ply, but which cords are free from contiguous contact with each other; at least one ply of

the fabric has cords maintained longitudinally of the valve, and the ends of said ply are turned approximately perpendicularly to provide for their integral embedment within the elastomeric formed flanges provided at each end of the valve. This valve may be used in conjunction with a pair of valve actuators that are disposed diametrically approximate the midpoint of the valve, so that each actuator is capable of simultaneously compressing the valve approximately half of its diameter to curtail flow of materials therethrough.

In the process of forming said valve, at least one ply of the



elastomeric composition is wound around a core, the ply of fabric having cords maintained longitudinally of the valve is subsequently wound around said first ply, and then additional plies of elastomeric composition and of fabric having cords aligned circumferentially of the valve may be wound around said core to complete the valve; the extended ends of the longitudinally corded fabric are turned for disposition intermediate a pair of elastomeric annuluses provided at each end of the valve, and then the entire fabricated valve is placed within a mold and heated to cure the valve into an integral unit.

3,695,577

VALVE, PARTICULARLY A THERMOSTATIC EXPANSION VALVE FOR REFRIGERATING EQUIPMENT

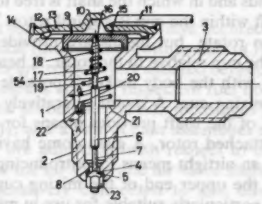
Hans Jorgen Jespersen, Sonderborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark

Filed Nov. 16, 1970, Ser. No. 89,832

Claims priority, application Germany, Nov. 27, 1969, P 19 59 547.2

Int. Cl. F16k *31/145*

U.S. Cl. 251—61.4 **7 Claims**



The invention relates to a thermostatic valve or the like of the type in which a spindle having a valve closure element at one end thereof is acted upon in one direction by a pressure responsive element and is biased in the other direction by a spring. The spindle is provided with screw threads and the spring which is conically shaped, has a coil portion complementary to and threadably engageable with the screw threads. The tension of the spring is adjusted by rotation of the spindle with a screwdriver or wrench depending on the type of tool engaging fitting the spindle is provided with at the lower end thereof.

3,695,578

GATE VALVE INCLUDING FLUID OPERATED LOCKING DEVICE

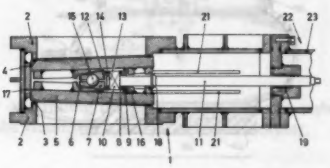
Ludwig Walther, Niederau; Matthias Esser, Duren, and Helmut Zilken, Derichsweiler, all of Germany, assignors to Firma Zimmermann & Jansen GmbH, Duren, Germany

Filed May 19, 1970, Ser. No. 38,794

Claims priority, application Germany, May 22, 1969, G 69 20 611.7; Dec. 11, 1969, P 19 62 121.7

Int. Cl. F16k *3/14*

U.S. Cl. 251—94 **7 Claims**



This invention relates to a gate valve and, more particularly, to fluid flow control apparatus having a sliding gate operated by a hydraulic actuator and an arresting mechanism for determining the limits of gate sliding motion.

3,695,579

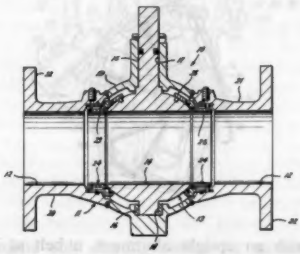
VALVE

Herbert Allen, P.O. Box 1212, Houston, Tex.

Filed June 1, 1971, Ser. No. 148,698

Int. Cl. F16k *5/06*

U.S. Cl. 251—174 **8 Claims**



A valve having a bearing ring of low friction material between each seat and the flowway through the valve body. Rings of elastomeric material seal between the bearing ring and each of the seat and flowway.

3,695,580

Patent Not Issued For This Number

3,695,581

Patent Not Issued For This Number

3,695,582

PNEUMATIC JACK FOR MOTOR VEHICLES

Robert A. Clay, Costa Mesa, Calif., assignor to Max R. Wheeler, Costa Mesa, Calif., a part interest

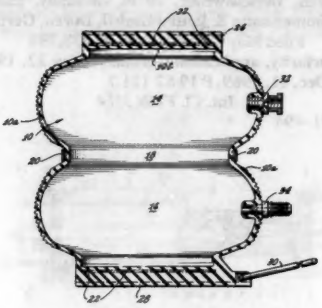
Filed Nov. 2, 1970, Ser. No. 86,035

Int. Cl. B66f *3/24*

U.S. Cl. 254—93 HP **4 Claims**

An improved lifting jack for motor vehicles and other uses, is provided which uses fluid pressure for operating power, and

which is used to raise a wheel of a motor vehicle up off the ground when the need arises to change the wheel or the tire of the vehicle. The vehicle jack of the invention is advantageous in that it incorporates a hollow flexible plastic body unit which



has a closed end integral construction so as to be easy to mold, and so that air leakage problems are obviated. The jack to be described is also constructed to be compressible to a minimal height when not in use.

3,695,583

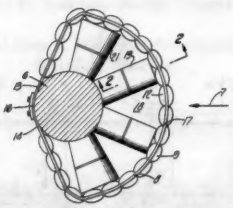
SHOCK ABSORBING STRUCTURE

Grant W. Walker; Duane B. Ford; Lester N. Meinzer, all of Sacramento, and Reid S. Larsen, Fair Oaks, all of Calif., assignors to Dynamics Research and Manufacturing, Inc.

Filed Sept. 4, 1970, Ser. No. 69,872

Int. Cl. E01f *15/00*

U.S. Cl. 256—1 **11 Claims**



For use with an upright abutment, a belt at its ends is mounted on the abutment and has its intermediate portion disposed with the belt web vertical and cantilevered out from and spaced away from the abutment. Frangible energy absorbers are disposed between the belt and the abutment and are supported thereon. Vertical cleats reinforce the belt web. In large installations, vertical diaphragm walls or belts are used between adjacent energy absorbers. Anchor cables may pass through and engage the diaphragms or belts.

3,695,584

Patent Not Issued For This Number

3,695,585

MIXING AND PLASTICIZING MACHINE AND PROCESS FOR OPERATING SAID MACHINE

Henrik Nielander, Bahnhofstrasse 94, CH-8001 Zurich, Switzerland

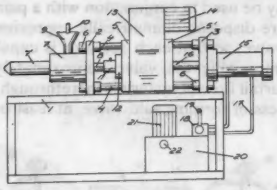
Filed May 19, 1970, Ser. No. 38,678

Claims priority, application Switzerland, May 23, 1969, 7776/69

Int. Cl. B01f *5/06*

U.S. Cl. 259—5 **17 Claims**

A mixing and plasticizing machine which comprises at least one mixing and plasticizing cylinder together with at least one screw cylinder and at least one axially movable mixing and plasticizing rotor with passages. The shaft of said mixing and plasticizing rotor is connected to a rotary drive outside the



mixing and plasticizing cylinder. At least one axially movable, rotary screw is coaxially connected to said mixing and plasticizing rotor.

3,695,586

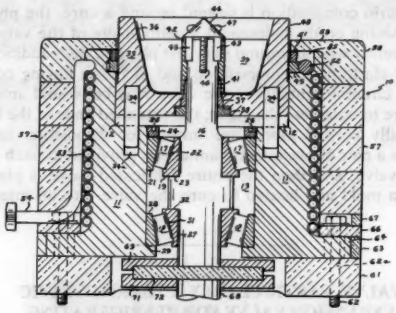
MIXING APPARATUS

Warren R. Griffin, 4949 Concordia Circle, Dayton, Ohio

Filed Nov. 5, 1970, Ser. No. 87,218

Int. Cl. B01f *7/16*

U.S. Cl. 259—24 **14 Claims**



A mixing apparatus is provided that comprises a metal body having a central, vertical opening extending throughout its length. The opening has a circular horizontal cross section with the upper portion of the opening having a larger diameter than its lower portion. Positioned in the opening and extending throughout its length is a vertical, rotatable shaft. There is a mixing cup disposed in the upper, enlarged position of the opening, the cup having a hole in its bottom through which the shaft extends and in which the shaft is free to rotate. Attached to the shaft within the cup is a spiral rotor. The mixing cup is not free to rotate, but means are provided for raising and lowering the cup relative to the rotor. A heat exchange means associated with the body makes it possible to either heat or cool the mixing cup. A motor operatively connected to the lower end of the shaft provides means for rotating the shaft and the attached rotor. A glass dome having gas and liquid ports and an airtight means for introducing solids can be attached to the upper end of the mixing cup. The mixing apparatus is particularly suitable for use in mixing small quantities of elastomers and compounding ingredients under controlled conditions.

3,695,587

MATERIAL MIXER

Robert Frank De Marco, Mentor, Ohio, assignor to Intercole Automation, Inc., Cleveland, Ohio

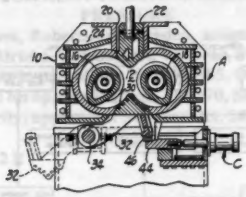
Filed June 18, 1971, Ser. No. 154,407

Int. Cl. B01f *7/08*

U.S. Cl. 259—41 **7 Claims**

A plastic mixer of the internal or closed mixing chamber-type having a bladed rotor in the mixing chamber and a

material discharge swinging door at the bottom of the mixing chamber, which door is fixed to a shaft oscillatable by a vane-type hydraulic motor and secured in closed position by a slidable bolt reciprocated by a hydraulic motor. The material



discharge door is relatively heavy and is moved rapidly by the door operating vane-type motor. The hydraulic system for actuating the door includes a device for controlling deceleration of the door.

3,695,588

Patent Not Issued For This Number

3,695,589

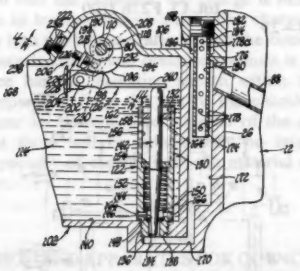
AIR VALVE CARBURETOR

Herbert T. Lamore, Detroit, Mich., assignor to Holley Carburetor Company, Warren, Mich.

Filed March 2, 1970, Ser. No. 15,427

Int. Cl. F02m *11/02*

U.S. Cl. 261—23 A **7 Claims**



An air valve carburetor has an air valve secured to an air valve shaft for pivotal rotation therewith; a pair of fuel metering valve assemblies are respectively situated between the carburetor fuel bowl means and the respective fuel nozzles situated within first and second air induction passages formed in the carburetor body; and a pair of cam assemblies carried by the air valve shaft are adjustable with respect to each other and with respect to the air valve and air valve shaft; the cam assemblies are operatively connected to and effective for variably positioning valving members of the fuel metering valve assemblies in accordance with the positions assumed by the air valve during engine operation.

3,695,590

CARBURETER OF THE OVERFLOW TYPE

Yoshio Nishihara, 2-32, Hishinuma Kaigan, Kanagawa Pref., Chigasaki, Japan

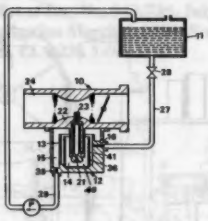
Filed Nov. 12, 1970, Ser. No. 88,698

Claims priority, application Japan, June 8, 1970, 45/56368

Int. Cl. F02m *37/06*

U.S. Cl. 261—36 A **2 Claims**

A carbureter of the overflow type which is provided with a partition wall and/or a screen in a fuel chamber of the carbureter for controlling the flow of fuel so as to stabilize a fuel layer in the vicinity of a fuel jet of the carbureter.



3,695,591

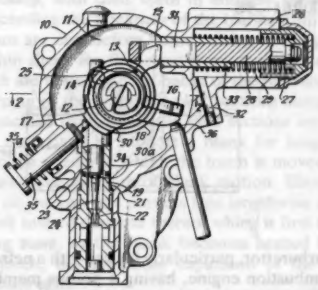
AUTOMATIC COLD STARTING DEVICES FOR INTERNAL COMBUSTION ENGINES

Charles Frederick Caisley, Stanmore, England, assignor to The Zenith Carburetter Company Limited, Stanmore, England

Filed March 23, 1970, Ser. No. 21,909

Int. Cl. F02m *1/04*

U.S. Cl. 261—39 D **6 Claims**



An automatic cold starting device for an internal combustion engine providing an auxiliary starting fuel supply which is a maximum for initial starting and decreases as the engine warms up, in which a fuel supply orifice is controlled by area-varying means the position of which is determined by a temperature sensitive device, a device responsive to actual starting of the engine holding the area varying means in a position to provide the maximum orifice area when the engine is not running and releasing the said means for control by the temperature sensitive device as soon as the engine starts. The temperature sensitive device may also control a fast-idle stop for the throttle valve of an associated carburetor providing the normal fuel/air mixture for the engine.

3,695,592

PLATE-TYPE AIR VALVE CARBURETOR

John Quatrano, Watkins Glen, N.Y., assignor to The Bendix Corporation

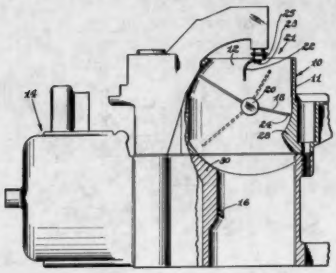
Filed June 8, 1970, Ser. No. 44,302

Int. Cl. F02m *7/22*

U.S. Cl. 261—50 A **2 Claims**

In a plate-type air valve carburetor having a variable direction air flow, air foil means are provided to compensate for the apparent change in direction of air flow from intermediate to high air flow conditions. As the plate-type air valve aligns itself with the direction of air flow, the upstream edge of the air valve plate encounters the low pressure region below

an air foil means and is rapidly snapped or drawn to its full open position. The air foil is positioned sufficiently upstream



of the air valve so that its net effect on the apparent direction of air flow is negligible.

3,695,593

CARBURETTOR CONTAINING POROUS MATERIAL E. G. FOAMED PLASTIC

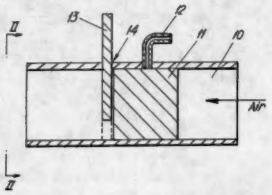
Harvey Ernest Postlethwaite, Runcorn, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Sept. 10, 1970, Ser. No. 71,130

Claims priority, application Great Britain, Sept. 15, 1969, 45,290/69

Int. Cl. F02m 9/02

U.S. Cl. 261—96 **13 Claims**



A carburettor, particularly for use with a petrol driven internal combustion engine, having a porous member, means for supplying petrol to it via a metering orifice from a constant level reservoir, means whereby the vacuum produced by the engine draws air through the porous member to produce a petrol/air mixture and a shutter located close to the downstream face of the porous member and adapted to move across the said face so as to shield progressively a variable area thereof and thus concentrate the air flow through certain zones of the porous member. The carburettor should be cheaper to manufacture than conventional carburettors, with which its performance compares favorably.

3,695,594

METHOD AND APPARATUS FOR OPERATING A PUSHER TYPE FURNACE

Frans Hollander, Castricum, Netherlands, assignor to Koninklijke Nederlandsche Hoogovens En Staalfabrieken N.V.

Filed June 16, 1970, Ser. No. 46,650

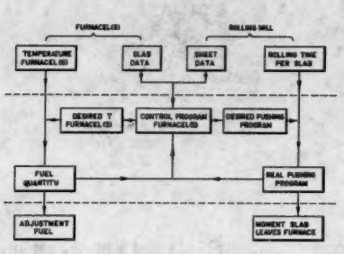
Claims priority, application Netherlands, Aug. 13, 1969, 6912326; Jan. 19, 1970, 7000722

Int. Cl. F27b 9/14

U.S. Cl. 263—6 R **10 Claims**

A method and an apparatus for operating a pusher type furnace for reheating metal slabs for rolling sheet or strip therefrom, including an advance control of fuel quantity supplied to different zones of the furnace and an advance control of the pushing speed through the furnace on the basis of information about the slabs, the final product to be obtained and the rolling practice, such information being processed during the rolling.

For a mill with cogging and finishing train the control data for the pushing speed are calculated from an optimum rolling and coiling program in and behind the finishing train, and the temperatures are calculated backwards from the required coiling temperature to the average slab temperature to derive furnace conditions from the calculated pushing speed and this



last temperature. This advance control of the furnace is, during heating and rolling, adjusted by real pushing speed and real temperature of the slabs in the furnace. Disturbances or delays in rolling entrain first a lower fuel supply, and after the delay is over, the heating, pushing and rolling are speeded up until the arrears are overcome.

3,695,595

METHOD AND MEANS FOR SINTERING MATERIALS, PARTICULARLY DOLOMITE AND MAGNESITE, IN A SHAFT FURNACE

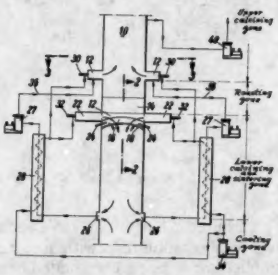
Karl Beckenbach, Meererbusch Hildegundisallee 33, Buderich/Dusseldorf, Germany

Filed Nov. 30, 1970, Ser. No. 93,578

Claims priority, application Germany, Dec. 10, 1969, P 19 61 789.1

Int. Cl. F27b 1/00

U.S. Cl. 263—29 **9 Claims**



A material, such as dolomite or magnesite, is sintered in an oil- or gas- fired shaft furnace by passing the material down the furnace through a calcining zone, a sintering zone and a cooling zone. The material is subjected to the action of gases flowing in counter-current to the material in the calcining zone, is sintered in the sintering zone by gases flowing in co-current, and is cooled in the cooling zone by gases flowing in counter-current. The exhaust gases are discharged from the lower end of the sintering zone while cooling air discharged from the upper end of the cooling zone is extracted from the furnace and is reintroduced therein together with fuel at the lower end of the calcining zone to provide the gases required to calcine the material. A fuel gas-air mixture containing substantially no exhaust gas is introduced into the upper end of the sintering zone and, depending on whether the fuel gas-air mixture contains an excess of oxygen or fuel, additional fuel or air is introduced into the material in the sintering zone so as to increase the combustion therein and heat the calcined material to the sintering temperature.

3,695,596

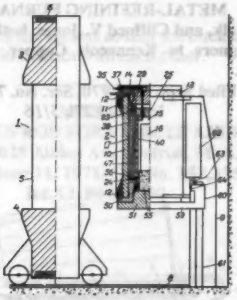
Patent Not Issued For This Number

3,695,597

FURNACE FOR HEAT TREATING OBJECTS UNDER PRESSURE

Hans Lundstrom, Robertsfors, Sweden, assignor to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Continuation-in-part of Ser. No. 866,885, Oct. 16, 1969, abandoned. This application Sept. 1, 1970, Ser. No. 68,665
Claims priority, application Sweden, Oct. 24, 1968, 14368/68
Int. Cl. C21d 1/00
U.S. Cl. 266—2 R **14 Claims**



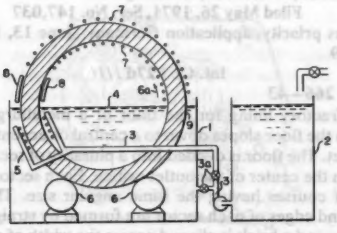
In manufacturing sintered bodies, a compacted charge of powder forming a billet is enclosed in a sealed casing of soft metal such as steel from which the air has been evacuated. The casing and powder are subjected to pressure at high temperature in a furnace chamber to sinter the powder. Before its introduction into the chamber, the charge is heated outside the furnace to treating temperature. The charge is inserted from below into the furnace, after which the bottom opening of the furnace is closed and pressure medium is introduced. The furnace has an insulating sheath within the furnace chamber depending from the top of the chamber and terminating near its bottom. The material of the casing is so chosen that there will be substantially no interchange of material especially of carbon, with the material of the compacted billet.

3,695,598

METHOD AND APPARATUS FOR QUENCHING A TUBULAR SHAPED STRUCTURE

Akira Ujue, No. 7-4, Tsukimiyamahon-machi 1-chome, Sumaku, Kobe-shi, Japan

Division of Ser. No. 716,646, March 27, 1968, Pat. No. 3,556,877. This application May 6, 1970, Ser. No. 47,925
Int. Cl. C21d 1/66
U.S. Cl. 266—4 A **3 Claims**



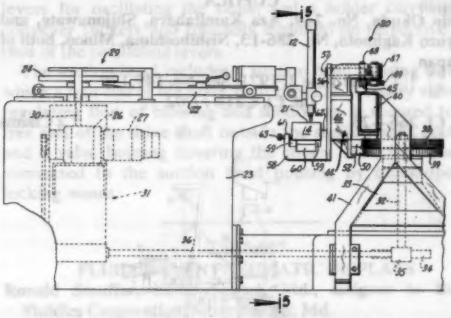
Apparatus for continuously quenching a thick-walled tubular structure having electromagnetic induction heating means above a quench tank wherein the workpiece is rotated through the heating and quenching means.

3,695,599

MACHINE FOR FLAME CUTTING GEAR RACKS

Glenway Maxon, Jr., and William H. B. Wright, III, both of 3129 W. Mill Road, Milwaukee, Wis.

Continuation-in-part of Ser. No. 843,725, July 22, 1969, abandoned. This application March 6, 1970, Ser. No. 17,126
Int. Cl. B23k 5/00, 7/00
U.S. Cl. 266—23 K **11 Claims**



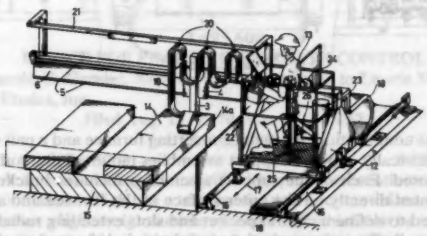
The flame of a cutting torch is passed through a central longitudinal zone of an elongated blank so that the kerf forms two rack sections with substantially identical teeth thereon. Rack sections with such flame cut teeth are secured together in side-by-side relationship, with their teeth in endwise register, to form a rack exceeding the thickness of the blanks from which the rack sections are cut. Before flame cutting of the teeth is commenced, thin slices are flame cut from opposite faces of the blank which are to become the backs of the rack sections, to prevent warping of the flame cut rack sections along their lengths. The machine from which the rack sections are cut is provided with a carriage to support a blank for lengthwise movement through a zone in which the torch is moved back and forth crosswise of the path of blank motion. Blank supporting means on the carriage permits free lengthwise expansion of the blank toward that end thereof which is first moved into the cutting zone, as the blank becomes heated by the flame of the torch, but precludes expansion of the blank toward its opposite end.

3,695,600

APPARATUS FOR FLAME SCARFING THE SURFACES OF CRUDE BLOCKS, BILLETS, INGOTS AND SIMILAR WORKPIECES

Gerhard Munch, Frankfurt am Main, and Albert Jager, Rommelhausen, both of Germany, assignors to Messer Griesheim GmbH, Frankfurt am Main, Germany

Filed Sept. 4, 1970, Ser. No. 69,821
Claims priority, application Germany, Oct. 18, 1969, P 19 47 284.5
Int. Cl. B23k 7/06
U.S. Cl. 266—23 H **7 Claims**



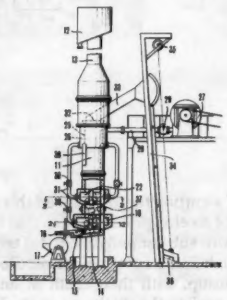
An apparatus for flame scarfing the surfaces of crude blocks, billets, ingots and like workpieces, consisting of an

operating carriage movable in guides and, a jib arm secured on the operating carriage and extending over the workpieces which are to be flame scarfed, carrying a vertically and horizontally adjustable scarfing torch assembly, having a torch head mounted for rotation about an axis coaxial with the direction of feed of the torch.

3,695,601
CUPOLA

Kazuo Okuda, No. 249, Aza Kamitahara, Shijonawate, and Syozo Kagimoto, No. 286-13, Nishiboshima, Minoo, both of Japan

Filed June 2, 1971, Ser. No. 149,170
Int. Cl. C21b *1/02*
U.S. Cl. 266—25 **2 Claims**

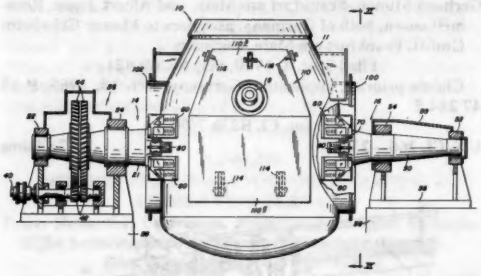


A cupola for melting pig iron or steel scrap. The cupola has a belly having a tapping hole at the lower portion thereof, a plurality of more than two spiral combustion chambers provided outside of belly burners. The burners use creosote oil as fuel and direct flame into these combustion chambers. The combustion chambers are provided with tuyeres for blowing flame from the burners into the belly, and the space under the belly is filled with a large number of block-shaped elements of refractory material having a high degree of refractoriness.

3,695,602
METAL CONVERTING FURNACE APPARATUS

Ernst A. Mevissen, Robinson Township, Allegheny County, Pa., assignor to Dravo Corporation, Pittsburgh, Pa.

Filed Aug. 20, 1970, Ser. No. 65,651
Int. Cl. C21c *5/42*
U.S. Cl. 266—36 P **25 Claims**

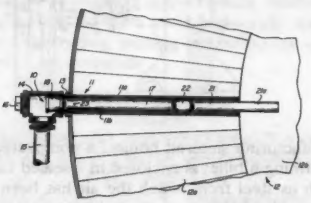


The combination of a metal converting furnace and a pair of diametrically opposed support assemblies mounted thereon is disclosed. Each of the support assemblies includes brackets mounted directly on the outer surface of the furnace and arranged to define a central pocket and slots extending radially outwardly from the pocket. A shaft has a hub formed on the inner end thereof and is shaped and sized to fit within the pocket, and lugs extending radially outwardly from the hub and shaped and sized to be received in the slots. The slots and lugs are shaped and sized to permit a reasonable amount of misalignment therebetween whereby mating of the shaft to the brackets is in the nature of a flexible connection. A heat shield is mounted on the outer surface of the furnace with the shield surrounding the tap spout of the furnace and enclosing an area around the spout. The shield serves as a heat sink for the heat radiated from molten metal poured into a ladle. Finally, the metal shell of the furnace is thickened in the area surrounding the tap spout. The thickened wall serves to resist distortion due to the thermal expansion concentrated in the area of the wall where the molten metal flows during tap off.

3,695,603
REPLACEABLE INSERT FOR TUYERE PIPES OF METAL-REFINING FURNACES

George A. Walk, and Clifford V. Jones, both of Salt Lake City, Utah, assignors to Kennecott Copper Corporation, New York, N.Y.

Filed Sept. 22, 1970, Ser. No. 74,283
Int. Cl. F27k *5/16*
U.S. Cl. 266—41 **3 Claims**



An assembly of insert piping for a tuyere pipe of a metal refining furnace comprises a length of pipe flared outwardly at one end to approximately the internal diameter of the tuyere pipe of the furnace, so as to fit snugly therein. The length of pipe is provided at its flared end with means for connection with a pipe puller and has its other end provided with means for temporary connection with a length of injection pipe that is adapted to project several inches into the furnace. The flared end of the flared pipe is preferably a bell-end adapter pipe fitting into which a pipe puller can be screwed, and the opposite end of such flared pipe is preferably connected to the injection pipe by means of a sleeve pipe coupling. The flared length of pipe is preferably of black iron perforated along its length to permit gas circulation therearound.

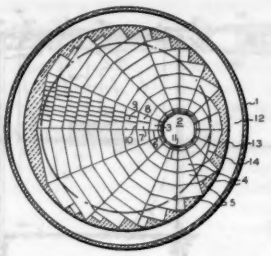
3,695,604
REFRACTORY LINING FOR THE FLOOR OF METALLURGICAL VESSELS

Hermann Stein, Mulheim-Saarn, Germany, assignor to Didier-Werke AG, Wiesbaden, Germany

Filed May 26, 1971, Ser. No. 147,037
Claims priority, application Germany, June 13, 1970, P 20 29 245.9
Int. Cl. F27d *1/16*
U.S. Cl. 266—43 **9 Claims**

A refractory lining for the floor of a metallurgical vessel wherein the floor slopes down to a central or eccentrically offset outlet. The floor is divided into a plurality of sectors radiating from the center of the outlet orifice. Each sector has a plurality of courses having the same angular size. The left and right hand edges of each sector are formed by straight courses of bricks and a brick is aligned across the width of each sector adjacent the outlet. Each straight course of bricks comprises at least a pair of wedge shaped bricks defining the left and right hand sides of each sector and the faces of the wedge-shaped bricks which face inwardly are parallel to each other.

The outside faces of the wedge-shaped bricks defining the sides of the sectors are inclined at an angle determined by the



number and slope of the sectors so that the outside faces of adjoining sectors are in contact with each other.

3,695,605

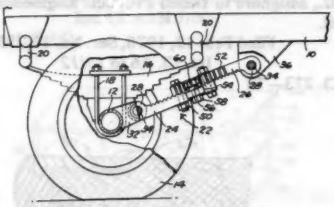
RADIUS ROD FOR VEHICLE AXLE

Antonio Grossi, 18025 Albion Ave., Detroit, Mich.

Filed June 11, 1971, Ser. No. 152,335

Int. Cl. B60g *1/00*

U.S. Cl. 267—66 **10 Claims**



A radius rod for a vehicle axle comprising two links arranged in overlapping relation with interengaged teeth on their confronting faces. The links are adapted to be clamped together and a gear is mounted on one of the links meshing with a gear rack portion on the other link for adjusting the length of the radius rod.

3,695,606

SUCTION HEAD IN SHEET FEED SYSTEMS FOR SHEET PROCESSING MACHINES

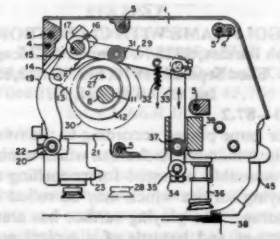
Arno Wirz, Schwetzingen, Germany, assignor to Heidelberger Druckmaschinen Aktiengesellschaft, Heidelberger, Germany

Filed June 10, 1970, Ser. No. 45,061

Claims priority, application Germany, June 11, 1969, P 19 29 714.4; June 11, 1969, P 19 29 715.5

Int. Cl. B65h *3/08*

U.S. Cl. 271—26 R **6 Claims**



Suction head in a sheet feed system for sheet processing machines includes a drive shaft mounting a cam disc, a lever system periodically driven by the cam disc against the bias of a spring, separating suckers for raising sheets from a pile thereof automatically adjustable to a given level, and conveyer suckers for transporting the sheets to further conveying means of the sheet feed system. The lever system includes a steering lever having a free end whereon the separating suckers are carried and which are guidable in a vertical guide by an encapsulated anti-friction bearing. The suction head also includes a pair of oscillating levers, an eccentric mounted on the drive shaft and operatively connected to the oscillating levers for oscillating the same, and a holder carrying the conveyer suckers and rotatably mounted on respective free ends of the oscillating levers.

The suction head includes a suction head housing through which a free end of the drive shaft projects. A rotary valve for regulating flow of blowing and suction air is secured to the free end of the drive shaft outside the suction head housing, and a valve housing covering the rotary valve is releasably connected to the suction head housing by quick-opening locking means.

3,695,607

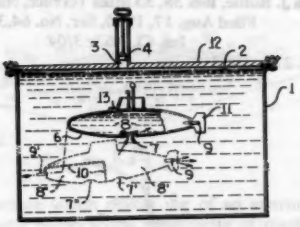
FLUID DRIVEN PNEUMATIC DISPLAYS

Ronald Stouffer, Silver Spring, Md., assignor to Bowles Fluidics Corporation, Silver Spring, Md.

Continuation of Ser. No. 716,378, March 27, 1968, abandoned. This application May 7, 1970, Ser. No. 37,382

Int. Cl. A63h *23/06*

U.S. Cl. 272—8 D **6 Claims**



The apparatus comprises a display device comprising a hollow body having an air bubble trapped therein. The body is located in a tank substantially filled with liquid. Apparatus is provided for selectively pressurizing the tank to force water into the body through a flap valve to increase its weight and cause it to sink. Release of pressure permits the pressurized water in the body to bleed out through a rear vent pipe permitting the body to rise. By fluctuating the pressure, water exiting through the vent pipe propels the body at a speed determined by the rate of fluctuations. The level of the body is determined by the average pressure maintained in the tank and steering is effected by the duty cycle of the pressure fluctuations, a rudder tending to produce rotation of the body in one direction and water being expelled through the vent pipe tending to produce rotation of the body in the opposite direction.

3,695,608

DEVICE FOR PRACTICING BREATH CONTROL

Harold E. Hanson, New York, N.Y., assignor to Lourie Visual Etudes, Inc.

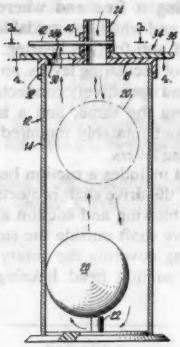
Filed Aug. 17, 1970, Ser. No. 64,452

Int. Cl. A63h *29/16*

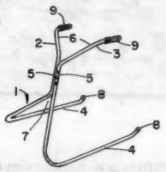
U.S. Cl. 272—57 R **9 Claims**

A device enabling an individual to practice breath control. A container which has a transparent wall accommodates in its interior a light-weight article such as a ball which can be raised by currents of air blown into the container. The air can discharge out of the container through an opening with which a second opening of a selected size can be placed in registry,

so that by selecting an opening of a suitable size to be placed in registry with the first opening it is possible to control the resistance to discharge of air out of the container, thus enabling the operator to practice breath control.



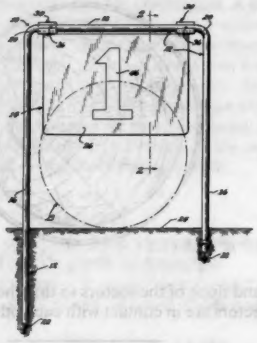
3,695,609
ICE SKATING AID
Barbara J. Rothe, Box 38, 53 Mills Terrace, Nahant, Mass.
Filed Aug. 17, 1970, Ser. No. 64,375
Int. Cl. A63c *3/04*
U.S. Cl. 272—70.3 **4 Claims**



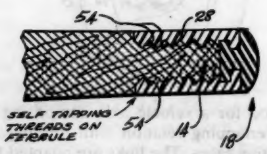
A skating aid formed by bending two base sections to form a runner and a vertical support section. The vertical support sections are joined to fix the runners apart and generally coextensive. A handle is attached to the vertical support section and can be formed integrally therewith. Wheels can be attached to the runners. The aid is useful in training persons to ice skate or roller skate.

3,695,610
CROQUET WICKET ASSEMBLY
Arnold M. Thompson, Box 172A, Gary Ave., Wheaton, Ill.
Filed Sept. 21, 1970, Ser. No. 73,708
Int. Cl. A63d *1/00*
U.S. Cl. 273—56 **1 Claim**

A croquet wicket assembly including a wicket frame which is formed of heavy rod stock, is of right angle configuration, i.e., U-shaped and is provided with a removable snap-on plastic flag which is attached to and suspended with stable equilibrium from the horizontal bridge portion of the frame so that it projects into the path of such croquet balls as may pass through the wicket frame for displacement thereby in order to verify such passage. Numerical indicia on the opposite faces of the flag identify the procedural order of wicket use when the wicket assembly is employed in conjunction with a full complement of similar croquet wickets. The vertical dimension of the flag and its positional relationship with respect to the horizontal bridge portion of the wicket frame are such that the mid-point of such dimension lies in a horizontal plane which is spaced from the ground a distance approximately equal to the diameter of a croquet ball.



3,695,611
BILLIARD CUE AND CUE TIP ASSEMBLY
John H. Lower, Glendora, and Peter Lagus, Altadena, both of Calif., assignors to Deneb Products Engineering, Glendora, Calif.
Filed Feb. 12, 1970, Ser. No. 10,755
Int. Cl. A63d *15/12*
U.S. Cl. 273—70 **1 Claim**

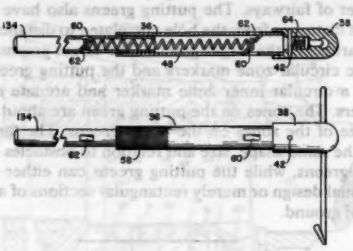


An improved billiard cue comprising a cue stick having a doweled portion at one end, a ferrule for sleeve-like engagement with the doweled portion and a synthetic elastomer tip of a specific configuration in locking engagement with the tip end of the ferrule and the doweled portion of the cue stick. The tip has three components or parts, a head, neck and base and is formed from a material such as neoprene with the neck extending through a reduced diameter portion at the tip end of the ferrule. The tip base and head components engage and seat against interior and exterior shoulders formed at the tip end of the ferrule. The side of the tip base component opposite the neck component engages and seats against the end of the doweled portion of the cue stick.

3,695,612
GOLF GAME WITH CLUB STROKER
David Joseph Barrios, 5825 N. Kenmore, Chicago, Ill.
Filed Sept. 21, 1970, Ser. No. 73,850
Int. Cl. A63f *7/06*, *7/10*
U.S. Cl. 273—87.2 **4 Claims**

An indoor game played according to the rules of golf utilizing manually actuatable strokers to which miniature-sized golf clubs are releasably mounted for propelling a ball across a flexible playing surface which may be rolled into cylindrical form for storage. The playing surface has areas representing fairways, greens and hazards of a typical golf course, said areas being differently textured to affect the roll of a ball stroked thereacross. In one embodiment the club is secured to the stroker by interacting portions on the stroker and club respectively comprising a non-circular opening with locating

portions therein in the stroker and a circular club having cut-out portions engaged by the locating portions. In a second em-



bodiment the stroker has a spring biased detent extending into an opening and the club has a recess in its shaft engaged by the detent.

3,695,613

Patent Not Issued For This Number

3,695,614

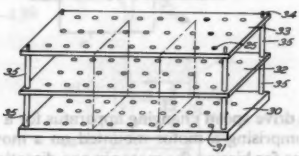
BOARD GAME APPARATUS

David W. Brisson, 142 Rochambeau Ave., Providence, R.I.

Filed June 5, 1970, Ser. No. 43,860

Int. Cl. A63f *3/00*

U.S. Cl. 273—130 AC **1 Claim**



A two-dimensional game board which represents a four-space hypercube has a flat base upon which eighty-one recesses are formed with the recesses being laid out in a square pattern having rows of nine recesses perpendicular to each other. This two-dimensional game board with its pattern of 81 recesses is the basic unit with which the two-dimensional game board for the five-space hyper hypercube is represented and with which further *n*-space configurations may be represented by adding predetermined additional multiples of the basic unit. The three-dimensional game board which represents the four-space hypercube has a rectangular base with 27 recesses thereon laid out in a line of reoccurring square patterns with each square having three lines of three recesses each. Support posts extending up from the base support two vertically spaced platforms with each platform having 27 recesses vertically aligned with the 27 recesses on the base.

3,695,615

BOARD GAME APPARATUS

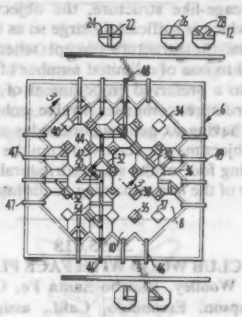
Philip L. Shoptaugh, 3317 Florida St., Oakland, Calif.

Filed June 12, 1970, Ser. No. 45,755

Int. Cl. A63f *3/00*

U.S. Cl. 273—130 R **10 Claims**

A game apparatus having a number of octagonal playing pieces which two or more players can alternately place on a premarked game board having a plurality of parallel starting lines on each side and end thereof. Four such octagonal pieces when placed together will leave a square at the center thereof. Each of the playing pieces has at least one line across the piece in different configurations. The squares at the centers of the octagonal pieces also may have lines across them in different configurations. The object of the game is to lien up the pieces in such a way that a continuous line is formed across the board from one starting line to another and making use of both the



lines on the octagonal playing pieces and on the squares, and the first player to complete a line wins.

3,695,616

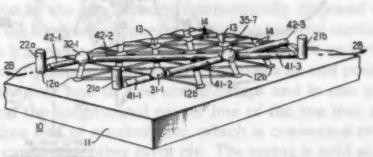
GAME STRUCTURE EMPLOYING MARKERS AND LINKS

Joseph H. Weber, 11 Powder Horn Court, Holmdel, N.J.

Filed Nov. 9, 1970, Ser. No. 87,678

Int. Cl. A63f *3/00*

U.S. Cl. 273—130 R **9 Claims**



A game structure which makes use of an apertured and channeled playing board and a multiplicity of markers and link members which constitute playing pieces that are arrangeable on the game board in the apertures and channels, respectively, to realize a desired configuration in accordance with a specified set of rules. The apertures form a grid and are connected by the channels.

3,695,617

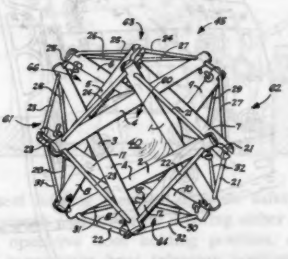
TENSEGRITY STRUCTURE PUZZLE

Geoffrey A. Mogilner, 2070 California St., W., San Diego, Calif., and Rodney D. Johnson, San Diego, Calif., assignors to said Mogilner, by said Johnson

Filed June 11, 1971, Ser. No. 152,055

Int. Cl. A63f *9/08*

U.S. Cl. 273—156 **13 Claims**



A puzzle comprising a cage-like tensegrity structure including a plurality of rigid columns having flexible tension members connected between the opposite ends thereof and having a slot at each end thereof. Each of the columns is slidably sup-

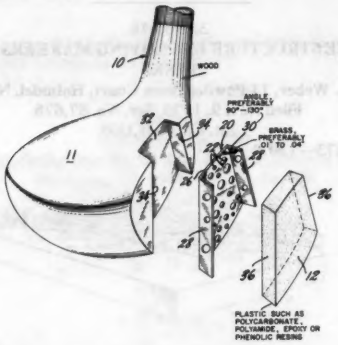
ported at opposite ends thereof by the tension members of adjacent columns, which tension members extend through the slots in the columns. A solid or hollow object is positioned within the cage-like structure, the object having an outer dimension which is sufficiently large so as to prevent removal thereof from the structure except when the structure is manipulated to one of a limited number of geometric shapes. According to a preferred embodiment of the present invention, the structure comprises twelve columns and forms a polyhedron having six quadrilateral sides and eight hexagonal sides. The object may be removed from the cage-like structure by contracting four of the six quadrilateral sides and then expanding one of the two remaining quadrilateral sides.

3,695,618

GOLF CLUB WOOD WITH FACE PLATE INSERT

Edward R. Woolley, Rancho Santa Fe, Calif., and William H. Thompson, Escondido, Calif., assignors to Acushnet Company

Filed Aug. 25, 1970, Ser. No. 66,843
Int. Cl. A63b *53/04*
U.S. Cl. 273—173 **5 Claims**



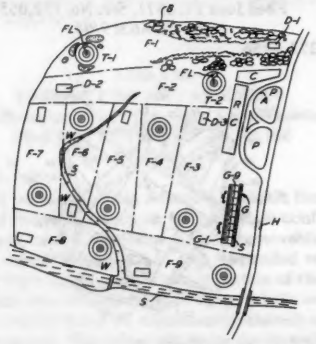
A new and useful improvement in the construction of the head of a wooden golf club is disclosed. The improvement comprises a metallic insert with a plurality of holes therein between the club head block and a plastic face plate.

3,695,619

GOLF COURSE WITH TARGET GREENS AND SEPARATE PUTTING GREENS

Scott Brobston, 1201-B Keller Road, Wind Gap, Pa.

Filed Sept. 7, 1971, Ser. No. 178,167
Int. Cl. A63b *67/02*
U.S. Cl. 273—176 A **6 Claims**



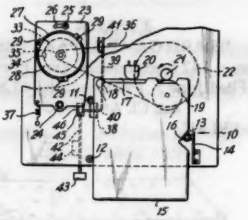
A golf course with regulation size fairways has target greens at the end of each fairway marked into concentric zones of proximity to the cup. Each fairway has its tee section adjacent the target green of the preceding airway. The course includes a separate group of putting greens corresponding to the number of fairways. The putting greens also have zone markers at distances from the hole correlated to distance provided for markers of the target greens. The target greens have concentric circular zone markers and the putting greens may include a circular inner zone marker and arcuate outer zone markers. The zones on the putting green are about two-thirds the size of the zones on the target greens. The target greens have the same shape, size and relation to obstacles as conventional greens, while the putting greens can either be of conventional design or merely rectangular sections of an elongate strip of ground.

3,695,620

TAPE DRIVE SPEED CHANGING APPARATUS

Itsuki Ban, 829, Higashi-Oizumimachi, Nerima-ku, Tokyo, Japan

Filed April 14, 1970, Ser. No. 28,403
Claims priority, application Japan, Apr. 17, 1969, 44/34685
Int. Cl. G11b *15/44*
U.S. Cl. 274—4 D **5 Claims**



A tape drive speed changing apparatus for a magnetic tape player comprising a motor mounted on a movable support, bias device for biasing the motor in one direction, a small and large drive pulley connected to the output shaft of the motor, a flywheel attached to a capstan for driving a magnetic tape, a belt normally trained between the small drive pulley and the flywheel, shift device for moving the belt to the position where the belt is shifted from the small drive pulley to the large drive pulley, a lock for locking the shift device in the condition in which the belt is trained to the large drive pulley, and a control device controlling operation of the lock whereby the belt is selectively shifted from the small to the large drive pulley or vice versa to drive the magnetic tape at normal playing speed or fast speed.

3,695,621

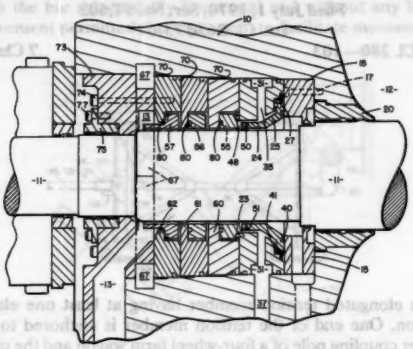
SHAFT SEAL FOR FLUID HANDLING MACHINE

Leonard P. Damratowski, Monroeville, and Eugene L. Huesgen, Jeannette, both of Pa., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Nov. 2, 1970, Ser. No. 85,936
Int. Cl. F16j *15/44*
U.S. Cl. 277—75 **5 Claims**

The invention relates to a sealing system for the impeller shaft of a fluid handling machine such as a compressor or turbine. A floating seal sleeve is mounted in an annular seal stator member fixed in the machine casing. The seal sleeve has limited axial and radial movement within the stator and is formed with a cylindrical portion, the bore of which has running clearance with the shaft. The surface area of the bore of the sleeve is less than the area of the outer surface of the sleeve. Seal oil under pressure flows between the seal stator and the seal sleeve and is passed through the sleeve to a groove formed in the bore of the sleeve, and also around one end of the sleeve to the shaft. The pressurized seal oil in the groove effectively blocks passage of process gas along the

shaft, and by flowing over the outer diameter of the seal sleeve removes heat generated by oil shearing and maintains the seal



sleeve at an acceptable temperature at high speed and pressure operation with long life expectancy.

3,695,622

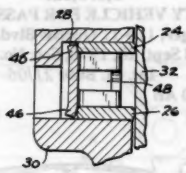
PISTON RING CONSTRUCTION

Lewis M. Davis, and Donald M. Hesling, both of Muskegon, Mich., assignors to Sealed Power Corporation, Muskegon, Mich.

Filed Dec. 18, 1970, Ser. No. 99,571

Int. Cl. F02j 5/00

U.S. Cl. 277—139 **25 Claims**



An improved spacer-expander for a piston ring featuring a latch which guides the ends of the spacer-expander into and out of abutment so that they will not become overlapped during assembly to a piston and assembly of the piston and ring assembly into an engine cylinder.

3,695,623

SAFETY SKI BINDING

Lorenzo Covini, Milan, Italy, assignor to Cober Fabbrica Articoli Sportivi, Milan, Italy

Filed May 27, 1970, Ser. No. 40,779

Claims priority, application Italy, May 28, 1969, 17440 A/69; April 14, 1970, 23280 A/70

Int. Cl. A63c 9/08

U.S. Cl. 280—11.35 D **10 Claims**

A safety ski binding which consists mainly of a hollow sole plate attached to the boot of the skier and releasably fastened to two longitudinally spaced brackets on the skis by longitudinally slidable locking pins whose cam-shaped outer ends are received in apertures of the brackets, a spring arrangement being interposed between the inner ends of the pins in the hollow interior of the sole plate. The tension of the spring can be adjusted from the outside by shifting spring seats.

3,695,624

TOE IRON FOR SAFETY SKI BINDINGS

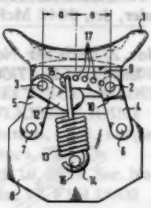
Roland Jungkind, Farchant, Germany, assignor to Hannes Marker, Garmisch-Parlenkicken, Germany

Filed Aug. 4, 1970, Ser. No. 60,847

Claims priority, application Germany, Aug. 5, 1969, P 19 39 843.7

Int. Cl. A63c 9/00

U.S. Cl. 280—11.35 T **7 Claims**



A soleholder member constitutes a coupling link of a four-bar linkage, which is movable from its normal position against the force of a spring and which comprises levers that are pivoted to a carrying plate which constitutes or is pivoted to a baseplate to be secured to the ski. One of the pivot pins which connect the coupling link to the levers and which in the normal position of the toe iron are symmetrically disposed with respect to the longitudinal center line of the toe iron carries an arm which is capable of a limited pivotal movement and which in the normal position of the toe iron assumes an end position in which the free end of said arm overlaps and in one point disposed on the longitudinal center line of the toe iron contacts the free end of another arm, which is connected to the lever that carries the other pivot pin. The spring is held at one end on the carrying plate or on the coupling link and at its other end engages the first-mentioned arm. This arm is provided with a series of spring-connecting means, which are selectively connectable to the spring and which do not influence the initial stress of the spring.

3,695,625

SKI BINDING

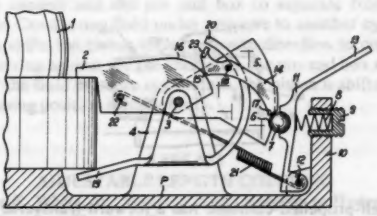
Georges Pierre Joseph Salomon, 34, Avenue de Loverchy, Annecy, France

Filed Nov. 23, 1970, Ser. No. 91,768

Claims priority, application Switzerland, Dec. 12, 1969, 18497/69

Int. Cl. A63c 9/00

U.S. Cl. 280—11.35 T **24 Claims**



A boot heel holding member of a ski safety binding is pivotally mounted and urged by a spring either downwardly towards an operative boot holding position, or upwardly towards an inoperative boot releasing position. A second pivotally mounted member can be releasably locked in a fixed position by adjustable locking means such as a spring-urged ball engaging in a recess. One-direction movement means act between the holding and second members so that when the

second member is locked in position the holding member can move towards the operative position under the action of the spring, whilst for movement of the first member towards the inoperative position the holding member is angularly locked with the second member. The binding can thus automatically adapt to different heel thickness and can accomodate a layer of snow the maximum thickness of which is independent of the spring strength. The one-direction movement means can be a pawl cooperating with a locking surface or any free-wheel mechanism.

3,695,626

UNI-RUNNER RECREATION DEVICE

Kenneth W. Alexander, Jr., 3042 McHenry Avenue, Cincinnati, Ohio

Filed Nov. 2, 1970, Ser. No. 85,859
Int. Cl. B62b *17/00*
U.S. Cl. 280—12 K **2 Claims**

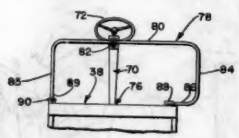
A ski member is provided with detachably mounted wheel assemblies and a detachably mounted and adjustable seat or handlebar element. The wheels may be removed for skiing, or secured thereto for skating or scooting. The seat member may be raised to serve as a handlebar or completely removed so the device can serve as a skateboard.

3,695,627

ADJUSTABLE STEERING COLUMN FOR AN AGRICULTURAL MACHINE

Darwin Carl Bichel, 872 38th Avenue; Robert La Verne Malcolm, R. R. 1, Box 327, both of Moline, Ill., and Wayne Eldon Slaverns, 3517 26th Avenue, Moline, Ill.

Division of Ser. No. 767,689, Oct. 15, 1968, Pat. No. 3,583,518. This application April 27, 1970, Ser. No. 43,278
Int. Cl. B62d *1/18*
U.S. Cl. 280—87 A **2 Claims**



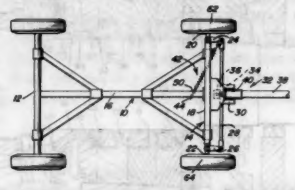
A self-propelled combine has a forward transverse engine adjacent the operator's station. The engine drives the various combine functions through several drive systems having inputs mounted on the engine output shaft and covered by an enclosure with a raisable top on which the operator's seat is mounted. The seat is also shiftable rearwardly to permit standup operation of the combine, which is facilitated by an adjustable steering column. The handrail at the front of the operator's station is attached to and moves with the steering column.

3,695,628

FARM WAGON STEERING STABILIZER

James C. Fisher, R.F.D. # 1, Shelbina, Mo.

Filed July 1, 1970, Ser. No. 51,603
Int. Cl. B62d *13/04*
U.S. Cl. 280—103 **7 Claims**



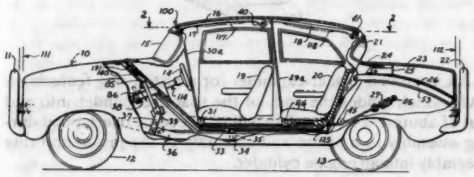
An elongated tension member having at least one elastic section. One end of the tension member is anchored to the center coupling pole of a four-wheel farm wagon and the other end of the tension member is connected to the outer end of the steering arm carried by one of the spindle assemblies of the front wheels of the wagon in order to apply a pull on the one steering arm to a first side of the wagon while applying a pull in the opposite direction on the rear end of the coupling pole. Further, a pull in the first direction is also applied to the forward end portion of the associated wagon tongue to which the tie rod for the front wheels of the wagon is secured and thus a thrust in the first direction is applied to the rear end of the towing vehicle to which the forward end of the wagon tongue is secured.

3,695,629

SAFETY VEHICLE FOR PASSENGERS

Samuel L. Schlanger, 110-11 Queens Blvd., Forest Hills, N.Y.

Filed Sept. 28, 1970, Ser. No. 75,984
Int. Cl. B60r *21/06*
U.S. Cl. 280—150 AB **11 Claims**



A safety vehicle for passengers having a movable passenger compartment which includes life-saving nets or cushions which become disposed in front of the passengers when the passenger compartment detaches itself from the vehicle and assumes its inclined position. The invention also includes release means connected to the front and rear bumpers for actively releasing the passenger compartment upon collision or impact as well as releasing the controls and steering wheel of the vehicle. A rack and pinion combination are also provided for connecting the passenger compartment to the vehicle to assure a parallel detachment of the compartment during a collision.

3,695,630

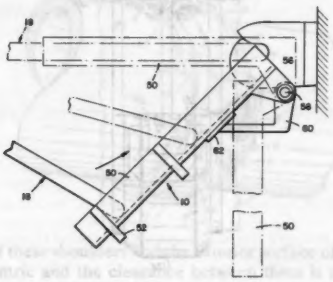
DEVICE FOR FACILITATING ATTACHMENT OF TRUCK CONVERTER AND TRAILER

Mark L. Zucca, 1608 Lafayette St., Alameda, Calif.

Filed May 28, 1971, Ser. No. 147,791
Int. Cl. B62d *53/00*; B60d *1/14*
U.S. Cl. 280—474 **5 Claims**

A device attached to a truck adjacent the hook or coupling thereof. The device is provided with a bottom wall and opposed side walls adapted to receive a portion of the tongue or

draft bar of a truck converter adjacent the eye or socket of such bar. Means are provided for releasably securing the bar in said device whereby the converter is locked in said device with the bar substantially horizontal and without any lateral movement permitted therebetween, to facilitate movement of



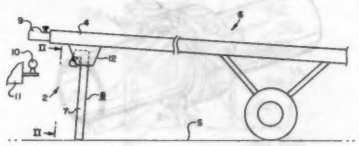
the truck and now attached converter into position with another trailer. In one embodiment of the invention, the device is pivotally attached to the truck and movable between a plurality of positions about a horizontal axis to facilitate the guiding of the bar eye into engagement with the coupling.

3,695,631

ANTI-THEFT DEVICE FOR TRAILER

John E. Schwaiger, 7556 Raleigh-la Grange Road, Cordova, Tenn.

Filed Nov. 3, 1970, Ser. No. 86,505
Int. Cl. B60d 7/00
U.S. Cl. 280—507 **8 Claims**



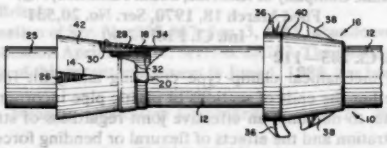
A device for attachment to a trailer comprising a U-shaped member having a flange mounted between the sides thereof to which a support member may be locked to maintain the support member in a position perpendicular to the tongue of the trailer and whereby the tongue of the trailer is maintained at an angle oblique to the surface upon which the trailer is resting. The support member may also be locked to the flange in a storage position.

3,695,632

HOSE COUPLER

Frederick V. Kruse, Kilbourne, and James D. Pichon, Havana, both of Ill., assignors to Ag-Rain, Inc., Havana, Ill.

Filed June 11, 1970, Ser. No. 45,336
Int. Cl. F16l 33/20
U.S. Cl. 285—5 **2 Claims**



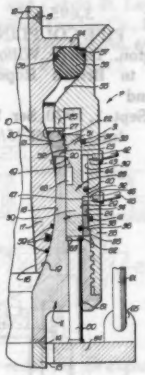
A hose coupler wherein the end of a hose member is slit longitudinally in a plurality of locations in order to permit it to be flared over a frusto-conical surface of a male coupling member. The latter is also provided with a roughened exterior surface in order to help prevent the slit end of the hose member from slipping off the frusto-conical surface. The male coupler member is provided with a substantially cylindrical surface region wherein a watertight seal is effected between the flexible hose member and the coupler. A female coupling member is provided with a frusto-conical inner surface so that it may be placed in telescoping relationship with respect to the slit end flexible hose and pulled toward the frusto-conical external surface on the male coupling member to establish a wedge fit therewith. In this manner it is possible to effect a watertight seal at one point and pull the assembly at another point whereby a leak does not develop if the end pull causes physical damage to the inner tube portion of the hose in the area of the hose where pull is effected.

3,695,633

REMOTELY CONTROLLED HYDRAULICALLY OPERATED CONNECTIBLE AND DISCONNECTIBLE FLEXIBLE JOINT

James W. E. Hanes, Ventura, Calif., assignor to Vetco Offshore Industries, Inc., Ventura, Calif.

Filed March 19, 1970, Ser. No. 20,920
Int. Cl. F16l 35/00
U.S. Cl. 285—18 **7 Claims**



A flexible ball and socket joint for incorporation in a marine riser adapted to extend from a blowout preventer attached to an underwater wellhead to a drilling vessel. A lock ring on the socket or box of the joint engages the ball or pin of the joint to hold the joint assembled, the ring being retained in such position by a piston slidable in a cylinder. Conducting fluid under pressure into one portion of the cylinder from a remote point shifts the piston to a non-holding position, permitting the lock ring to expand and the pin and box to separate from one another. Conducting fluid under pressure to another cylinder portion shifts the piston in the opposite direction to contract the lock ring against the pin and retain the pin and box assembled. If the fluid pressure system fails, the piston is shiftable to its releasing position mechanically.

3,695,634

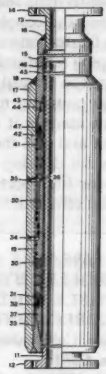
ADJUSTABLE LENGTH COUPLING

William E. White, Jr., Houston, Tex., assignor to Hydro Tech Services, Inc., Houston, Tex.

Filed Oct. 19, 1970, Ser. No. 81,681
Int. Cl. F16l 21/00
U.S. Cl. 285—31 **1 Claim**

Adjustable length coupling including coaxial telescoping housings arranged for connection at their axially outward ends to other members. Tapered slips and radially deformable packers located in an annulus between the housings are arranged for actuation by an hydraulic force into restraining and

sealing engagement between the housings to prevent relative movement between the housings after installation. The



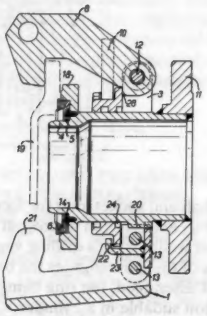
coupling may be used in construction of structures and to make connections between pipe sections.

3,695,635

PIPE COUPLING

Arthur L. Paddington, Thorpe Willoughby, near Selby, England, assignor to British Ropes Limited, Doncaster, Yorkshire, England

Filed Sept. 1, 1970, Ser. No. 68,718
Int. Cl. F16l *35/00*
U.S. Cl. 285—38 5 Claims



A quick-release pipe coupling comprises a hollow cylindrical body having a collar axially slidable thereon and supporting a plurality of hooks for engaging the flange of a pipe to be coupled to the hollow cylindrical body, and an annular thrust member mounted on the body adjacent to the collar and in screw-threaded engagement with the body, so that rotation of the thrust member causes axial displacement of the collar and forces the hooks to clamp the flanged pipe against the body.

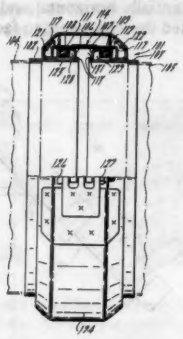
3,695,636

FLEXIBLE TUBE JOINT USING SEGMENTED COUPLING

Robert W. Graves, Woodland Hills, Calif., assignor to Aeroquip Corporation, Jackson, Mich.

Filed April 3, 1970, Ser. No. 25,333
Int. Cl. F16l *5/00*
U.S. Cl. 285—47 5 Claims

A hot air duct connection which allows for tube expansion and contraction. A pair of flanges are secured to the ducts and support seals which engage a surrounding sleeve. The flanges carry ball segment members which are surrounded by a complementary retainer to permit limited rocking action of the



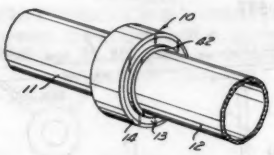
flanges while restraining them against axial separation and maintaining the seal.

3,695,637

INFLATABLE COUPLING

James Glenn Satterthwaite, 5011 Dogwood Trail, Portsmouth, Va., and James B. Macy, Jr., 107 River Drive, Morehead City, N.C.

Filed May 6, 1970, Ser. No. 35,164
Int. Cl. F16l *17/00*
U.S. Cl. 285—97 10 Claims



An inflatable coupling for connecting adjacent members is disclosed. Such coupling may be used to releasably connect pipes or the like providing a fluid tight connection therebetween. When required, the coupling can accommodate swiveling movement or the like. The coupling may also be used to transmit torque between two adjacent members to serve as a brake, clutch or power drive connection. The coupling includes a closed loop gas-impervious body of elastomeric material providing a continuous chamber which is pressurized when coupling is required, and exhausted when release of the coupling is required. Flexible wall means assume a release position when the chamber is exhausted and move to a position for engagement with the associated members to be coupled when the chamber is pressurized.

3,695,638

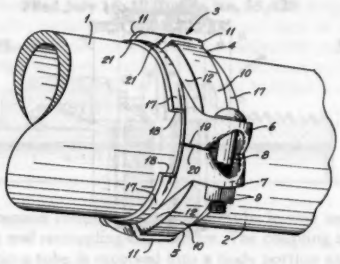
COUPLING FOR PLASTIC PIPE

James Blakeley, Thornhill, Ontario, Canada, assignor to Victaulic Company of America, South Plainfield, N.J.

Filed March 18, 1970, Ser. No. 20,531
Int. Cl. F16l *17/00*
U.S. Cl. 285—112 9 Claims

A mechanical clamp type coupling and joint for joining together the ends of sections of plastic pipe incorporates elements to maintain an effective joint regardless of stress concentration and the effects of flexural or bending forces on the joint. The pipe sections are grooved circumferentially at a position adjacent their ends to receive the key sections of cylindrical segmented coupling housings. A pressure responsive gasket mounted within the housing has lips engaging the exterior of the pipe sections between their grooves and op-

posed ends. Shoulders forming circumferential sections extend laterally outwardly from the sides of the coupling housings to overlie the pipe outwardly of the grooves. The interior



surfaces of these shoulders and the exterior surface of the pipe are concentric and the clearance between them is restricted preferably to a definite tolerance to protect the joint from opening up under flexing or bending forces.

3,695,639

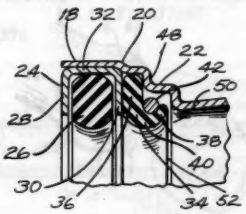
CONNECTOR

Harold Shire, Los Angeles, and Ira R. Newman, Lakeview Terrace, both of Calif., assignors to General Connectors Corporation, Burbank, Calif.

Filed Aug. 7, 1970, Ser. No. 62,003

Int. Cl. F16l *13/04*

U.S. Cl. 285—114 **14 Claims**



The invention is characterized by two generally ring shaped seals mounted in spaced side by side relationship at the end of a connector housing. The outer seal is generally circular in cross-section and the inner seal is generally channel shaped in cross-section and includes a first leg, and a second smaller leg connected together by a web portion. The end of the connector tube is provided with formations for holding the seals in the housing. These formations may include first and second counterbores for positioning the inner seal in the end of the connector housing. The base of the second counterbore is normally in spaced relation to the inner side of the second leg to permit the legs of the inner seal to flex when a pipe mounted in the connector pivots or vibrates.

3,695,640

PIPE COUPLINGS

John Henry Clague, Douglas Isle of Man, Great Britain, assignor to Mannin Engineering Limited, Douglas Isle of Man, Great Britain

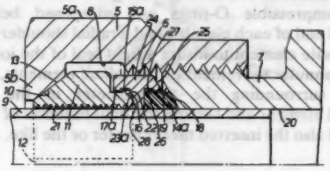
Continuation of Ser. No. 695,467, Jan. 3, 1968, abandoned. This application April 22, 1970, Ser. No. 28,283. The portion of the term of this patent subsequent to June 1, 1988, has been disclaimed.

Claims priority, application Great Britain, Aug. 26, 1967, 39371/67

Int. Cl. F16l *19/06*

U.S. Cl. 285—116 **18 Claims**

A pipe coupling comprises a screw-threaded member to surround the pipe and adapted for threaded engagement with a body bored to receive the extremity of the pipe, a tapered split collar for engagement with a corresponding taper on an inner surface of the threaded member to permit contraction on the collar into gripping engagement with the pipe and a separate non-split sealing device attached to the split collar to effect sealing engagement between the pipe and the body. The seal-



ing device is removably attached to the split collar by being sprung into engagement therewith under radial contraction of the collar which expands again when a lip and rebate formation between the collar and the sealing device comes into operation.

3,695,641

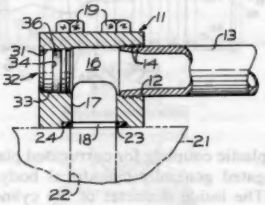
TUBE FITTING HAVING TAPERED ACCESS OPENING AND CLOSURE PLUG

Frederick S. Engelking, and Calvin D. Loyd, both of Peoria, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Sept. 2, 1970, Ser. No. 69,029

Int. Cl. F16l *55/12*

U.S. Cl. 285—121 **6 Claims**



In an elbow fitting for receiving an expandible tube, an access opening is provided to permit internal access to the tube opening for an expander tool, the access opening having an outwardly converging, tapered bore with a tapered plug being arranged in the access opening after the tube is secured within the tube opening in order to seal the fitting.

3,695,642

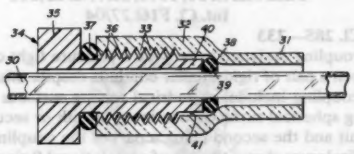
FLEXIBLE PRESSURE-TYPE JOINT FOR RIGID TUBING

Charles M. DeWoody, Vineland, N.J., assignor to Ace Glass Incorporated, Vineland, N.J.

Continuation-in-part of Ser. No. 673,376, Oct. 6, 1967, Pat. No. 3,499,670. This application Jan. 7, 1970, Ser. No. 1,226

Int. Cl. F16l *47/00*

U.S. Cl. 285—133 R **6 Claims**



A pressure-type joint for connecting one tubular element formed of non-flexible plastics material and provided with an externally threaded male portion, into a second tubular element formed of glass and having an internally threaded female

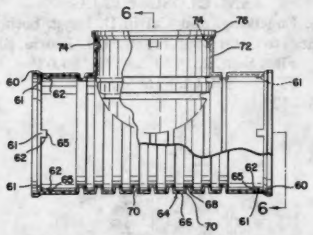
portion. The externally threaded element is provided with a central, longitudinal bore for receiving a thermometer or the like, and the threads of this element are of sufficiently reduced dimensions with respect to the internal threads of the other element to provide an annular clearance between the threads to permit relative angular movement of the joined elements so as to minimize chances of breaking the thermometer or the like. Compressible O-rings are interposed between the threaded end of each element and a radial shoulder formed on the opposite element to insure a tight seal of the joint, despite relative annular movement of the joined elements, one of the O-rings surrounding the thermometer in the externally threaded element and serving the dual function of sealing the joint and also the inserted thermometer or the like.

3,695,643

CORRUGATED TUBE COUPLING MEANS

John D. Schmunk, Findlay, Ohio, assignor to The Hancock Brick & Tile Company, Findlay, Ohio

Filed May 18, 1970, Ser. No. 38,437
Int. Cl. F16l *21/00, 41/00*
U.S. Cl. 285—156 **8 Claims**



A thermoplastic coupling for corrugated plastic tubing having an elongated generally cylindrical body and mouth at either end. The inside diameter of the cylindrical body approximates the outside major diameter of the corrugated tubing. Cleats along the inner circumference of the mouth have inwardly directed vertical faces and inwardly converging camming surfaces in order to permit the tubing to enter the coupling but impede its removal. Optionally the coupling may have a corrugated body. Where the coupling feature of this invention is employed in connection with a fitting such as a Tee it is preferred that the body be corrugated. A Tee coupling may be formed by including a branch which protrudes outwardly from the side of and in fluid communication with the cylindrical coupling body.

3,695,644

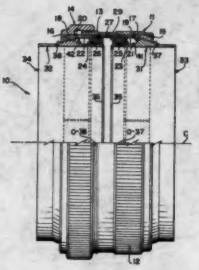
BALL TYPE FLEXIBLE COUPLING FOR RIGID CONDUITS

Leonard Z. Goldberg, Canoga Park, Calif., assignor to Lockheed Aircraft Corporation, Burbank, Calif.

Filed March 30, 1970, Ser. No. 23,811
Int. Cl. F16l *27/04*
U.S. Cl. 285—233 **3 Claims**

A coupling designed to provide a pressure tight connection between a pair of rigid tubular conduits despite misalignment. The coupling includes cylindrical sealing surfaces as well as mating spherical surfaces, one integral with or secured to the conduit and the second being a part of the coupling housing. The disclosure shows the use of conventional 0 ring type seals positioned between cylindrical sealing surfaces. The centers of the spherical surfaces are located at the axis of the conduit and aligned with the seal portion so that relative movement of the conduit with respect to the coupling also produces longitudinal movement of the conduit and minimal compressive loading of the 0 ring seal.

An arrangement of coupling parts employing split or C ring



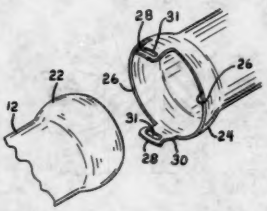
parts and cooperating wedge ring is disclosed to provide non-captive mounting parts.

3,695,645

BALL AND SOCKET PIPE JOINT UTILIZING TWO RESILIENT FINGERS WITH CLIP SPRING REINFORCEMENT

Adolph C. Mommsen, Minneapolis, Minn., assignor to Metal-Matic, Inc., Minneapolis, Minn.

Filed June 17, 1970, Ser. No. 46,879
Int. Cl. F16l *27/04*
U.S. Cl. 285—261 **7 Claims**



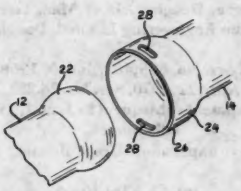
The ball portion of a pipe section is received in a socket portion having a single pair of diametrically located resilient fingers. A clip spring has its ends in engagement with the two fingers to enhance the holding action thereof.

3,695,646

BALL AND SOCKET PIPE JOINT WITH CLIP SPRING

Adolph C. Mommsen, Minneapolis, Minn., assignor to Metal-Matic, Inc., Minneapolis, Minn.

Filed June 18, 1970, Ser. No. 47,284
Int. Cl. F16l *27/04*
U.S. Cl. 285—261 **5 Claims**



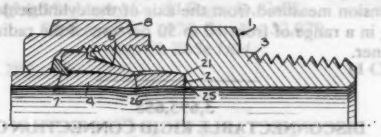
Curved ends of a clip spring extend through diametrically disposed slots in the socket portion of a pipe section, thereby resiliently holding the ball portion of a second pipe section.

3,695,647

PIPE COUPLING

Joseph A. Pugliese, Fairview, N.J., assignor to Hoke Incorporated, Cresskill, N.J.

Filed July 16, 1970, Ser. No. 55,428
Int. Cl. F16l 19/06
U.S. Cl. 285—341 3 Claims



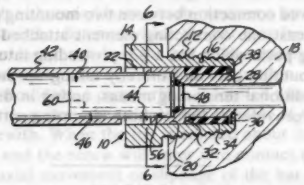
A compression coupling for a pipe or tube having improved uncoupling and recoupling capabilities. The coupling is of the type wherein a tube is received into a body portion and is attached thereto by the action of one or more ring-like ferrules which are wedged between the tube and the body by a coupling nut. The improvement is principally in the shape of the tube receiving bore in the body which is made with angularly positioned tube sizing and tube braking surfaces. This shaping of the bore causes the tube when initially attached to and seated on the body to have a selective reshaping which facilitates tube removal and reinsertion regardless of dimensional variations in the body and tube sizes.

3,695,648

COUPLING

Andre Marosy, 24731 Kipling, Oak Park, Mich.

Filed Aug. 6, 1970, Ser. No. 61,546
Int. Cl. F16l 37/00
U.S. Cl. 285—376 7 Claims



A quickly attachable and detachable coupling for connecting a hose or the like to a fitting in a fluid tight relationship. The coupling includes a male member attached to the hose and having a pair of spaced ears and the fitting is provided with a female portion having slots to receive the ears and to produce a locking connection between the fitting and the male member upon relative rotation of the members through an approximately one quarter turn. During the turn the ears engage a cam surface to move an inner sleeve of the fitting into compressing engagement with a seal to provide a sealing fit between the sleeve and the fitting. The sleeve is also provided with a conical seat which receives an O-ring carried by the male member to provide a fluid tight connection between the male member and the fitting.

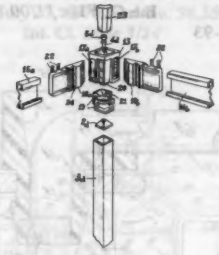
3,695,649

DEVICE FOR ASSEMBLING TUBULAR MEMBERS

Rene Georges Lavergne, 19 Avenue Henri Barbusse, Champrosay, Essonne, France

Filed June 5, 1970, Ser. No. 43,804
Claims priority, application France, June 19, 1969, 6920569; April 29, 1970, 7015684
Int. Cl. F16b 2/14
U.S. Cl. 287—54 A 4 Claims

An assembling device for securing a tubular member to any other member, comprising a pair of wedging members adapted to be engaged into said tubular member and having externally the same shape as the inner section of said tubular member. Said wedging members consist of a pair of complementary half-shells forming between them a cavity of which the internal wall is inclined. An expansion core is disposed into said cavity and of its external wall have the same inclination as the internal wall of said cavity. A control screw is engaged in an axial hole formed into said core, and said screw is



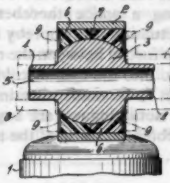
adapted to caUse an axial movement of said expansion core in said cavity for obtaining the expansion of said complementary half-shells.

3,695,650

BALL JOINT FOR OMNI-DIRECTIONAL MOTION ATTACHMENTS

Klaus Stuck, Buderich, Germany, assignor to A. Ehrenreich & Cie., Duesseldorf-Oberkassel, Germany

Filed Sept. 22, 1970, Ser. No. 74,324
Claims priority, application Germany, Oct. 23, 1969, P 19 53 397.2
Int. Cl. F16c 11/06
U.S. Cl. 287—88 3 Claims



A ball joint having a ball element surrounded by a pair of ball cups of plastic material which are friction welded along the equator of the ball element and having a sleeve surrounding the ball cups.

3,695,651

BALL JOINT WITH COVER PLATE

Klaus Stuck, Buderich, Germany, assignor to A. Ehrenreich & Cie., Duesseldorf-Oberkassel, Germany

Filed Sept. 22, 1970, Ser. No. 74,325
Claims priority, application Germany, Oct. 21, 1969, P 19 53 000.8
Int. Cl. F16c 11/06
U.S. Cl. 287—87 8 Claims

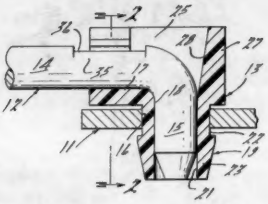
A ball and socket joint having a cover plate connected to the peripheral edge of the joint housing by a friction weld.

3,695,652

ACTUATOR ROD CONNECTOR

Jonas Ratnikas, Dearborn, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Oct. 21, 1971, Ser. No. 191,268
Int. Cl. F16c *11/00*
U.S. Cl. 287—93 4 Claims



A pivoted lever member having an aperture at one end, an elongated substantially L-shaped actuating rod for swinging the lever member, and an integrally molded plastic connecting device for coupling the actuating rod to the apertured end of the lever member.

The connecting device comprises a base member having an actuating rod receiving aperture at one end and cylindrical retention means insertable through the lever member aperture for holding the connecting means on the latter. The cylindrical retention means projects from the apertured end of the base member and has a bore axially aligned with the aperture adapted to receive a short leg of the L-shaped actuating rod. The base member has spaced upstanding side walls adapted to receive a long leg of the L-shaped actuating rod therebetween. The side walls of the base member terminate in opposed retention flanges having a space therebetween less than the thickness of the actuating rod whereby the long leg of the L-shaped rod must be forced between the retention flanges as its short leg is inserted into the cylindrical means bore for a permanent connection to be made. Coating retention means on the long leg of the actuating rod are engageable by the retention flanges to inhibit separation of the actuating rod from the connecting device.

3,695,653

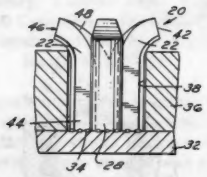
Patent Not Issued For This Number

3,695,654

SOLID CYLINDRICAL MALE FASTENER AND STRUCTURAL ASSEMBLY

Engelbert A. Meyer, Union Lake, Mich., assignor to USM Corporation, Warren Division, Mount Clemens, Mich.

Continuation-in-part of Ser. No. 766,200, Oct. 9, 1968, abandoned. This application April 9, 1970, Ser. No. 26,855
Int. Cl. F16b *5/04*
U.S. Cl. 287—189.36 R 8 Claims



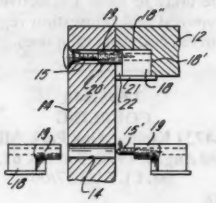
A male fastener adapted to secure a structural member to a support without perforation of the support includes a plurality of elongated resistingly deformable, ductile segments arranged in parallel contiguous relation and united along their lines of contiguity around a common axis providing an integral but axially separable generally cylindrical fastener with one end of the segments adapted to be welded or otherwise permanently secured to the support and with the opposite ends adapted to be axially split apart and deformed radially outwardly and downwardly to secure an underlying member to the support. The segments may be defined by radial grooves formed in one integral cylindrical member. The segments preferably are united in their integral relation within a radial dimension measured from the axis of the cylindrical fastener lying in a range of from 10 to 50 percent of the radius of the fastener.

3,695,655

DISCONNECTABLE RIGID CONNECTION OF MOUNTING PARTS ESPECIALLY FURNITURE WALLS

Josef Wippermann, Paderborn, Germany, assignor to Richard Heinze, Herford/Westphalia, Germany

Filed Jan. 29, 1970, Ser. No. 6,684
Claims priority, application Germany, June 11, 1969, P 19 29 685.6
Int. Cl. F16b *12/14*
U.S. Cl. 287—20.92 F 11 Claims



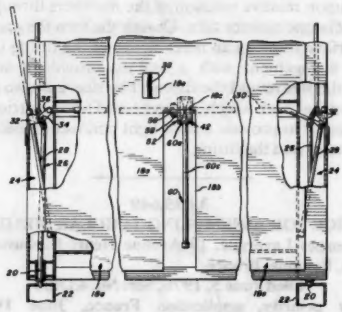
Improved connection between two mounting parts. There is used at least one connecting element attached to one of the mounting parts which has a pin protruding into a bore of the other mounting part and thereby taking up the shear forces while additional tensioning means, acting in direction of the bore are provided to tighten both mounting parts against each other.

3,695,656

LATCH OPERATING MECHANISM FOR BULKHEADS

Samuel H. Enochian, Thornton, Ill., assignor to Unarco Industries Inc.

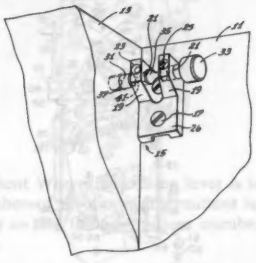
Filed Oct. 16, 1970, Ser. No. 81,294
Int. Cl. E05c *1/06, 9/16*
U.S. Cl. 292—36 9 Claims



An improved mechanism for operating the latches of a bulkhead, by means of a third handle spaced between the upright edges of the bulkhead, is provided by cam means that effects selective reciprocation of a cross rod which interconnects the two latch-operating handles that are normally provided at the edges of the bulkhead. The cam means include and cooperate with a handle that pivots relative to the cross rod that is to be

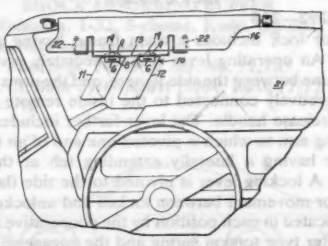
reciprocated. The cam means normally bias the handle to a stored-away position within the confines of the bulkhead.

3,695,657
SLIDE LOCK
Ruth Rosen, Marina del Rey, Calif., assignor to Automatic Packaging Machinery Co., El Segundo, Calif.
Filed April 27, 1970, Ser. No. 32,079
Int. Cl. E05c *1/04*
U.S. Cl. 292—57 **11 Claims**



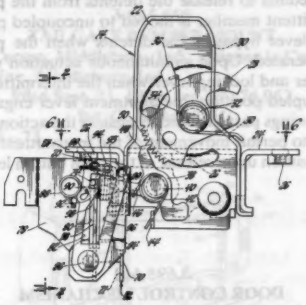
A cast having one or more mounting holes through which a screw may be passed for mounting the casting on a jamb. A pair of upstanding ears are formed with coaxial apertures therein for axial movement of a sliding bar therethrough. The bar is provided with a machined intermediate section which may be positioned between the upstanding ears so that the shackle of a padlock may be positioned about the machined portion to prevent the bar from being withdrawn. Each ear is provided with a threaded bore which receives a screw or bolt so as to control the distance which the bar may be moved by abutting shoulders formed on the bar at its opposite limits of travel. Adjacent one side of the machined portion, and intermediate the shoulders, a cam surface is formed which may be moved past the screw when the lowest portion of the cam is aligned therewith. When the bar is rotated about its axis, the cam surface and the screw will enter into contact to prevent inadvertent axial movement or slippage of the bar. A center punch is formed on the leading end of the bar to aid in locating the centers of bores which must be drilled in a closure member which is locked against movement when the bar extends into such bores.

3,695,658
GLARE SHIELD
Fred Vacha, Lincoln Drive, Concord, N.H.
Filed Nov. 9, 1970, Ser. No. 87,891
Int. Cl. B60j *3/02*
U.S. Cl. 296—97 C **4 Claims**



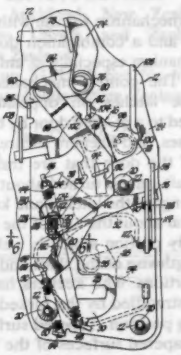
This disclosure relates to a tinted glare shield device which is adapted to be attached to an automobile sun visor and which is constructed so that a driver's eyes are shielded against glare from oncoming headlights while retaining unimpaired clear vision in his lane.

3,695,659
HOOD LATCH ASSEMBLY
Edmond R. Gionet, Warren, and Neil A. Hull, Birmingham, both of Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed July 27, 1970, Ser. No. 58,358
Int. Cl. E05c *3/24*
U.S. Cl. 292—216 **5 Claims**



A vehicle body hood latch assembly includes a blocking lever pivoted on a latch housing and biased to either a blocked position or an unblocked position by an overcenter spring. The blocking lever includes a blocking edge which, when the blocking lever is in blocked position, is engaged by a tab mounted on a release lever to prevent movement of the release lever from an unreleased position to a released position and consequent undetenting of a bolt. Movement of the blocking lever to unblocked position moves the blocking edge out of the path of the tab and allows movement of the release lever to the released position and the undetenting of the bolt. The tab slides along a return edge of the blocking lever during this movement of the release lever and moves the blocking lever back toward blocked position such that the spring moves overcenter and returns the blocking lever to blocked position substantially concomitant with the undetenting of the bolt.

3,695,660
VEHICLE BODY DOOR LOCK
Harry H. Fetters, Detroit, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Aug. 31, 1970, Ser. No. 68,123
Int. Cl. E05c *3/26*
U.S. Cl. 292—216 **5 Claims**



A vehicle body door lock includes a fork bolt and toothed plate mounted on the frame for movement between latched and unlatched positions. Coaxially mounted primary and secondary detents engage a tooth of the plate to maintain the bolt in latched position. An outside push button lever is

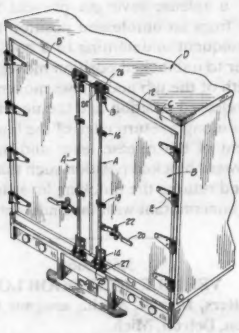
pivoted to an intermittent member. A locking lever is also coupled to the intermittent member to move the intermittent member about its pivot between coupled and uncoupled positions. An abutment lever is pivoted to the intermittent member and is normally spring biased to a position laterally of the intermittent member. When the intermittent member is in coupled position, shifting movement of the intermittent member by the push button lever engages the abutment lever with the detents to release the detents from the plate. When the intermittent member is moved to uncoupled position, the abutment lever bypasses the detents when the push button lever is operated. Upon simultaneous actuation of the push button lever and locking lever when the intermittent member is in uncoupled position, the abutment lever engages the detents and swings past the detents against the action of the biasing spring to permit movement of the intermittent member to coupled position upon release of the push button lever.

3,695,661

DOOR CONTROL MECHANISM

John V. Pastva, Parma Heights, Ohio, assignor to The Eastern Company, Cleveland, Ohio

Filed March 16, 1970, Ser. No. 19,867
Int. Cl. E05c *3/04, 3/02*
U.S. Cl. 292—218 **8 Claims**



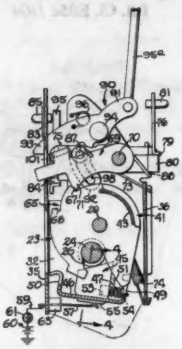
A door control mechanism for use with a pivoted door and associated frame, and a combination door, door frame and door control mechanism especially as embodied in a truck or cargo container. The control mechanism is comprised of identical cam-type latches on opposite ends of a shaft rotatably connected to a pivoted door by bearing members engaged by the latches, and keepers secured to the door frame adjacent edges of the door that are transverse to the door pivot axis. The shaft can be turned about its longitudinal axis to engage and disengage the latches and keepers. Each cam or latch is symmetrical about the axis of the shaft and has a central U-shaped body portion which is welded to the shaft by welds running lengthwise of the shaft and two oppositely projecting forked portions. The keepers have two spaced post portions that are straddled by the forked portions of the cam when in a latching position. Tapered surfaces of the posts are cooperable with tapered surfaces of the forked portions during latching to shift the door into alignment with the frame and to prevent lateral shifting or distorting of the frame relative to the door after latching. One post portion of each keeper has projecting flange portions with concave surfaces that receive and cover ends of the associated cam, and retain the door in a closed position. The latching cams and keepers are constructed so they can be forged for economic manufacture.

3,695,662

LATCH FOR VEHICLE DOORS

Leonard K. Ploughman, Rockford, Ill., assignor to Atwood Vacuum Machine Company, Rockford, Ill.

Continuation-in-part of Ser. No. 751,194, Aug. 8, 1968, abandoned. This application Sept. 18, 1970, Ser. No. 73,312
Int. Cl. E05c *3/26*
U.S. Cl. 292—216 **16 Claims**



A free-wheeling and concealed latch for a vehicle door includes a force transmitting connector pin mounted for controlled floating within slots formed in a locking lever and a contactor, the locking lever being operable to shift the pin within the slot in the contactor between positions coupling and uncoupling the contactor with a pawl for releasing the latch. When the connector pin is in its coupling position, actuation of the contactor causes the pin to shift in one portion of the slot in the locking lever to release the pawl and, when the pin is in its uncoupling position, actuation of the contactor causes the pin to shift within a different portion of the locking lever slot and to pass by the pawl without releasing the latter so that the contactor free-wheels to leave the latch in a locked condition. In one embodiment, the latch is restored automatically to an unlocked condition when the door is closed unless the contactor is first actuated to place the connector pin in a predetermined position in the locking lever slot.

Also disclosed are (1) a unique retaining arrangement for preventing the latching element of the latch from tearing out of the latch base in case of an accident; (2) a simplified mounting for a striker-engaging wedge; and (3) a novel arrangement responsive to the position of the wedge for signaling if the door is not fully closed and latched.

3,695,663

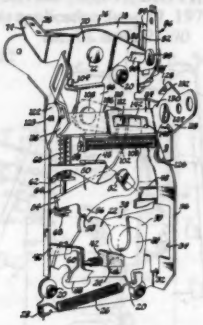
CLOSURE LATCH

Stanley D. Cockburn, 4713 Lutz Drive, Warren, Mich.

Filed Oct. 28, 1970, Ser. No. 84,763
Int. Cl. E05c *3/26*
U.S. Cl. 292—216 **3 Claims**

A door lock includes a main frame having spaced side flanges. An operating lever is intermediately pivoted to the main frame between the side flanges, and the arms of the lever are respectively connected to the inside remote handle and outside release handle. The lever further includes a laterally extending arm to which is pivoted one end of an intermittent member having a laterally extending tab at the free end thereof. A locking lever is pivoted to the side flanges of the frame for movement between locked and unlocked positions and is located in each position by the cooperative action of an overcenter type torsion spring and the engagement of shoulders of the lever with a tab of the frame. The locking lever includes an arcuate slot in which is received the tab of the intermittent member. An inverted fork bolt is mounted on the frame for movement between latched and unlatched positions and a detent for the bolt is also pivoted to the main frame and includes a lateral arm. The locking lever slot in the unlocked

position of such lever proscribes a path about the detent pivot. Movement of the operating lever when the locking lever is in unlocked position bodily shifts the intermittent member and engages the intermittent member tab with the detent arm to



release the detent When the locking lever is in locked position, the slot thereof pivots the intermittent lever about the operating lever so that the intermittent member tab bypasses the detent arm.

3,695,664

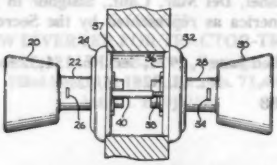
DOOR KNOB RETAINING APPARATUS

Roger J. Nolin, Monterey Park, Calif., assignor to Tool Research & Engineering, Beverly Hills, Calif.

Filed Jan. 7, 1971, Ser. No. 104,685

Int. Cl. E05b *3/00*

U.S. Cl. 292—352 **14 Claims**



Door knob retaining apparatus comprised of a spring loaded member adapted for movement within a rosette assembly of a door latch unit. The spring loaded member is urged to a first axial position so as to prevent the release of a door knob engaging finger and is adapted to be moved to and retained at a second axial position to allow the release of the door knob engaging finger. Using this door knob retaining apparatus, an outside door knob may not be released and removed from the outside, but may be readily released and removed from the inside by using a special tool for this purpose.

3,695,665

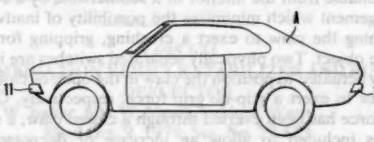
SHOCK ABSORBING BUFFER

Hirotsugu Matsuura, 1-32, 5-chome, Kudo, Oji-cho, Kitakatsuragi-gun, Nara-ken, Japan

Filed Sept. 14, 1970, Ser. No. 71,723

Int. Cl. B60r *19/08;* **B61f** *19/04;* **B61q** *11/12*

U.S. Cl. 293—70 **4 Claims**



A bumper of the shock absorbing system to be attached to the front and the rear of the automobile, said bumper being a tubular hollow member consisting of an elastic material, such as a soft synthetic resin and the like, the inside thereof being filled with fluid, e.g., liquid or gas, it being so arranged that the fluid inside said tubular hollow member can flow into an absorbing hollow member communicating with said tubular hollow member through a resistance tube or a check valve exclusively when the bumper receives a shock.

3,695,666

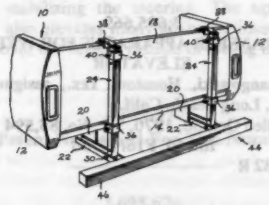
TAILGATE BUMPER MOUNT

Claude E. Corson, Middlebury, Ind., assignor to Coachmen Industries, Inc., Middlebury, Ind.

Filed Sept. 21, 1970, Ser. No. 74,062

Int. Cl. B60r *19/04*

U.S. Cl. 293—73 **10 Claims**



A tailgate bumper device for attachment to a truck or similar vehicle. The tailgate bumper device includes a support member which is adapted for securement to the vehicle below the bed thereof and adjacent the bed opening. The support member includes an extension part and a pivotal part which is located rearwardly of the bed opening and which is connected to the extension part so as to be shiftable about a substantially horizontal pivotal axis fore and aft of the vehicle. The pivotal part carries means for securing the tailgate of the vehicle thereto and is shiftable about its pivot connection between a first position in which the tailgate is caused to span the bed opening and a second position in which the tailgate is located below the bed opening to expose the bed of the truck. A bumper is carried by the support member and is attachable first to the extension part of the support member when the pivotal part thereof is positioned in its first position and secondly to the pivotal member when the pivotal member is positioned in its second position.

3,695,667

LIFTING DEVICES

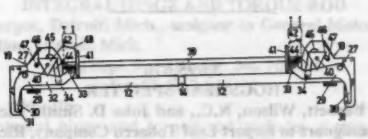
Gordon Dempsey, Auckland, New Zealand, assignor to Frederick George Ullrich and Zeola Edna Ullrich, Christchusch, New Zealand

Filed Aug. 31, 1970, Ser. No. 68,159

Claims priority, application New Zealand, June 16, 1970, 160,505

Int. Cl. B66c *1/28*

U.S. Cl. 294—67 DA **7 Claims**



A jig for combination with a lifting means, the jig comprising a frame, a plurality of assemblies mounted on the frame at spaced positions, first shafts journalled in pairs of the assemblies, second shafts journalled in such pairs of assemblies, a third shaft geared to the second shafts, lift arms mounted on the first shafts and adapted for connection to a lifting means, control and controlled members mounted on the second shafts

for operative engagement with the respective lift arms and actuating levers pivoted to the particular lift arms for operating the control members, the construction and arrangement being such that on the lift arms being connected to a lift means and a lifting force exerted by such means, the levers actuate the control members to hold the lift arms at an article lifting position or when the lifting force is released, the lift arms are allowed to move to an article release position.

3,695,668

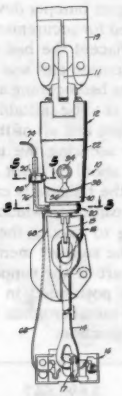
Patent Not Issued For This Number

3,695,669

FLUID TRANSFER APPARATUS FOR WELL PIPE ELEVATOR

Faustyn C. Langowski, Houston, Tex., assignor to Byron Jackson Inc., Long Beach, Calif.

Filed Oct. 30, 1970, Ser. No. 85,594
Int. Cl. F16l *27/00*
U.S. Cl. 294—82 R **11 Claims**



Apparatus for conducting pressurized fluid from a hook structure having a swiveling hook to a fluid operated well pipe elevator attached to the swiveling hook with such apparatus being mounted in sheltered and shielded relation with respect to the swiveling hook and the adjacent body of the hook structure.

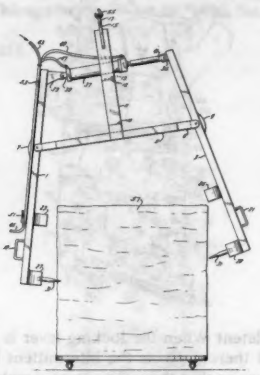
3,695,670

HOGSHEAD SPLITTER

Joseph Barnett, Wilson, N.C., and John D. Smith, Richmond, Va., assignors to Export Leaf Tobacco Company, Richmond, Va.

Filed Jan. 8, 1971, Ser. No. 104,910
Int. Cl. B66c *1/10*
U.S. Cl. 294—88 **7 Claims**

Two arms are pivotally mounted to ends of a cross member and each have a pair of inwardly directed probes mounted on the lower ends thereof. A pneumatic cylinder connects the upper ends of the arms so that the entire device forms a jaw-like apparatus that is opened and closed by the pneumatic cylinder in response to operation of a control valve. The entire



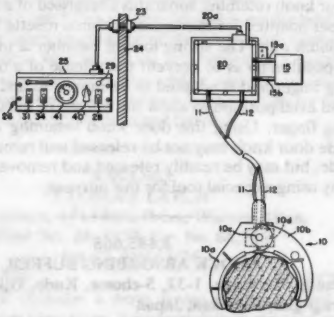
device is supported by an electrical hoist for positioning the device vertically and horizontally.

3,695,671

HYDRAULIC CLAW CONTROL SWITCHING ARRANGEMENT

Kenneth R. Fishel, Del Mar, Calif., assignor to The United States of America as represented by the Secretary of the Navy

Filed June 9, 1971, Ser. No. 151,328
Int. Cl. B25j *15/02*
U.S. Cl. 294—88 **3 Claims**



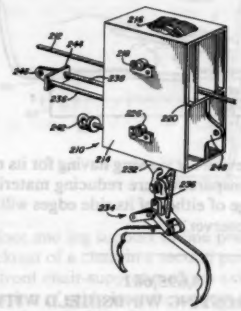
A remotely disposed electro-hydraulically actuated claw is controllable from the interior of a submersible by a switching arrangement which minimizes the possibility of inadvertently switching the claw to exert a crushing, gripping force on a fragile object. Two physically separated switches are independently actuated to position the claw in the open or closed position, or to exert a grip-no grip force, respectively. Once the grip force has been exerted through a closed claw, a separate dial is included to allow an increase or decrease of the gripping force as determined by the object's weight or its fragility. Being thusly physically disposed and electrically interconnected, the possibility of the claw's being inadvertently switched to an unwanted mode of operation is minimized.

3,695,672

REMOTE CONTROL GRAPPLE CARRIAGE OPERATED BY YARDING MACHINE

John H. Mitchell, 400 W. Curtis St., Aberdeen, Wash.

Division of Ser. No. 783,015, Dec. 11, 1968, Pat. No. 3,540,770. This application June 17, 1970, Ser. No. 47,105
Int. Cl. B66c *21/00*
U.S. Cl. 294—112 3 Claims



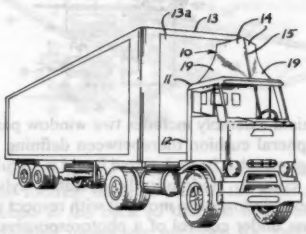
A grapple carriage riding on a skyline capable of being slackened and tightened, and having a grapple supported thereon with means for opening and closing the grapple for gripping and releasing a log, the means includes a remote control associated with a yarding machine so that an operator may cause opening or closing of the grapple from the yarding machine and also move the carriage along the skyline and for positioning the grapple during a logging operation.

3,695,673

AIR-FLOW DIVERTER FOR TRACTOR-TRAILER RIG

James H. Meadows, 113 Locust Ave., Spencer, W. Va.

Filed Sept. 11, 1970, Ser. No. 71,469
Int. Cl. B60j *9/04*
U.S. Cl. 296—1 S 3 Claims



Air-flow diverter affixed on tractor cabin roof of tractor-trailer rig, is generally plow-shaped to present rearwardly divergent concave surfaces, lower portions of which are presented upwardly. Air-flow against forwardly moving rig is diverted to fan around the top and adjacent side edges of trailer, while air-flow resultantly applied against said upwardly presented lower portions applies downward steadying pressure against cabin roof, and thereby tending to amplify tractional capability of tractor.

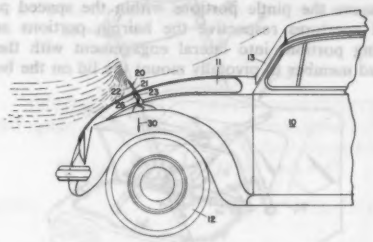
3,695,674

COMBINATION VEHICLE STABILIZER AND BUG DEFLECTOR

William W. Baker, 601 W. Mead, Yakima, Wash.

Filed Oct. 9, 1970, Ser. No. 79,521
Int. Cl. B60j *1/20*; B62d *37/02*
U.S. Cl. 296—1 S 7 Claims

A blade-like deflector adapted to extend laterally across the front deck lid of vehicles which are comparatively light on the front wheels and subject to wind sway, for example, the "Volkswagen bug." The deflector directs air upwardly and the reaction force produces a downward moment on the front wheels thus stabilizing the steering. The upward flow of deflected air also elevates many air-borne insects and causes them to pass over the vehicle instead of hitting the windshield.



3,695,675

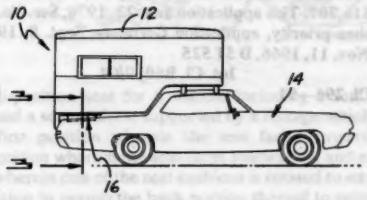
Patent Not Issued For This Number

3,695,676

AUTOMOBILE CAMPER MOUNTING

Arthur C. Clark, and Ted Timmons, both of San Jose, Calif., assignors to Holiday Vehicle Specialties, Inc., Mountain View, Calif.

Filed June 10, 1971, Ser. No. 151,795
Int. Cl. B60p *3/32*
U.S. Cl. 296—23 MC 10 Claims



An adjustable arrangement for mounting a camper unit to varying conventional automobile trunk openings by easily adjustable mounting units which mount along the rain gutter at the edge of the automobile trunk opening to provide distributed load transmission between the camper unit and the trunk rain gutter.

3,695,677

Patent Not Issued For This Number

3,695,678

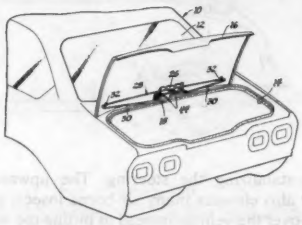
INTEGRAL HINGE AND TORQUE ROD

Bela Gergoe, Detroit, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Sept. 9, 1970, Ser. No. 70,633
Int. Cl. B62d *25/10*
U.S. Cl. 296—76 4 Claims

An integral hinge and torque rod includes a pair of oppositely extending generally U-shaped hairpin portions whose first ends respectively terminate in a common generally U-shaped bight portion that extends transversely of the hairpin portions. The respective second ends of the hairpin portions terminate in respective generally offset portions that include respective aligned pintle portions and respective mounting portions. Body and lid mounted members include pairs of aligned apertures respectively adjacent the hairpin portions

and laterally spaced from each other substantially the same distance as the distance between the pintle portions. The rod is deflected to allow lateral outward movement of the offset portions and subsequent lateral inward movement to respectively move the pintle portions within the spaced pairs of aligned apertures respective the hairpin portions and the mounting portions into lateral engagement with the body mounted member to pivotally mount the lid on the body for



movement between open and closed positions and to hold the rod against bodily shifting movement with respect to the body. The open and closed ends of the bight portion respectively engage portions of the lid mounted member to bias the lid toward open position. In an alternate embodiment, the second ends of the hairpin portions overlap each other and the pintle portions are respectively received within the opposite pairs of aligned apertures respective the hairpin portions.

3,695,679

MOTOR VEHICLE BODY

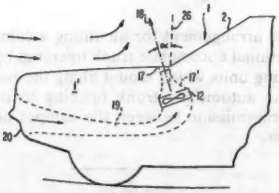
Karl Wilfert, 43 Fritz-von-Gravenitz-Strasse, 7016 Gerlingen-Waldstadt, Germany

Division of Ser. No. 666,387, Sept. 8, 1967, Pat. No. 3,516,707. This application Jan. 22, 1970, Ser. No. 4,853

Claims priority, application Germany, Sept. 8, 1966, D 51 055; Nov. 11, 1966, D 51 525

Int. Cl. B60j *9/04*

U.S. Cl. 296—91 **14 Claims**



A motor vehicle body which includes a windshield and a body structure located in front thereof, especially for passenger motor vehicles, in which the windshield and/or other parts of the vehicle are kept substantially free of dust and dirt by providing apertures in the body structure in front of the windshield through which either at least a part of the dynamic air flow, which would normally flow against the windshield and/or other part to be kept clean, is sucked off into and through the vehicle body or an additional air stream or air flow is blown directly toward the windshield and/or other vehicle wall to be kept clean.

ERRATUM

For Class 296—76 see:
Patent No. 3,695,658

3,695,680

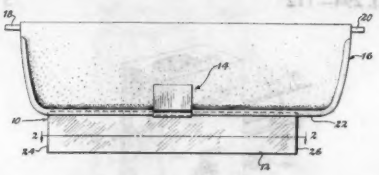
BINOCULAR GLARE SHIELD

John Van Sickle, 1841 Billington Road, East Aurora, N.Y.

Filed June 4, 1970, Ser. No. 43,449

Int. Cl. B60j *3/00*

U.S. Cl. 296—97 F **8 Claims**



A glare reducing device for viewing having for its main body portion a sheet of transparent glare reducing material so constructed that no image of either of its side edges will be visible to either eye of the observer.

3,695,681

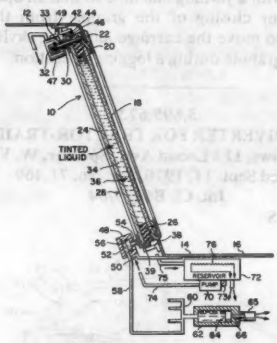
SELF-DEFROSTING WINDSHIELD WITH AUTOMATICALLY VARIABLE TRANSPARENCY

Walter E. Dockery, 2120 La Vera Drive, Tuscaloosa, Ala.

Filed Aug. 21, 1970, Ser. No. 65,884

Int. Cl. B60j *3/04*

U.S. Cl. 296—97 F **4 Claims**



A windshield assembly includes two window panes with an elastic peripheral cushion therebetween defining a compartment through which a heated, tinted liquid is circulated under thermostat control. Hydraulically operated cylinders connected to one window pane moves it with respect to the other window pane under control of a photoresponsive device for changing the transparency of the liquid in the compartment.

3,695,682

Patent Not Issued For This Number

3,695,683

Patent Not Issued For This Number

3,695,684

MULTI-USE, BODY-RELAXING FURNITURE UNIT

Vernon G. Barberg, Rte. 2-Box 16, Cokato, Minn.

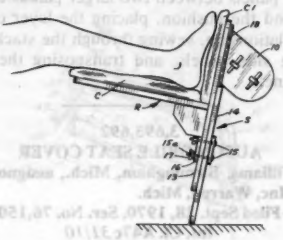
Filed July 2, 1970, Ser. No. 51,756

Int. Cl. A47c *13/00*

U.S. Cl. 297—1 **2 Claims**

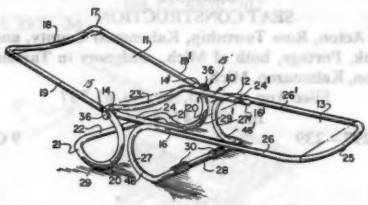
A multi-use furniture unit for providing comfort and relaxation to the human body comprises essentially three main com-

ponents, to wit; first, an elongate preferably adjustable support adapted in one use to be tiltably positioned uprightly as a sand and in another use to constitute a base and seat support for a chair; secondly, a body-rest member adapted to be held substantially perpendicularly to said support to act as an



elevated foot and leg support in one position of the unit, and as the backrest of a chair in a second position of the unit; and thirdly, a front chair-support medium extending laterally from an end portion of said elongate support and in a direction opposite from that of said body-rest member.

3,695,685
LOUNGE CHAIR
Thomas L. Lamb, 36 Wellington St., East Toronto, Ontario, Canada
Filed Oct. 16, 1970, Ser. No. 81,385
Claims priority, application Canada, Oct. 17, 1969, 065176
Int. Cl. A47c *1/034*
U.S. Cl. 297—29 **10 Claims**



A chaise lounge having a seat, a back and a footrest, the back and the footrest being pivoted to the seat. A rocker is rigidly attached to the back so that the occupant can rock himself. Adjusting means are provided for locking the assembly in a desired position, the whole assembly being so balanced that an occupant can adjust it while seated.

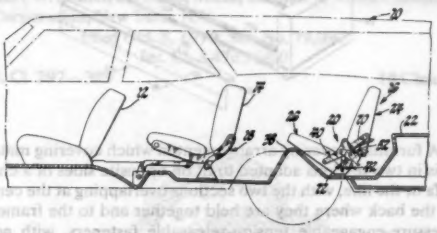
3,695,686
Patent Not Issued For This Number

3,695,687
STACKABLE FOLDING CHAIR
Tim M. Uyeda, South San Gabriel, Calif., assignor to Samsonite Corporation, Denver, Colo.
Continuation-in-part of Ser. No. 753,393, Aug. 19, 1968, abandoned. This application Sept. 9, 1970, Ser. No. 70,817
Int. Cl. A47c *4/24*
U.S. Cl. 297—56 **16 Claims**

A stackable folding chair having a non-metallic back rest and non-metallic feet at the bottom of each leg to prevent metal to metal contact when two such chairs are placed side by side in use and also when two or more of such chairs are folded and stacked one on top of the other or in an upright row. A molded plastic seat has a metal guide beneath for a top

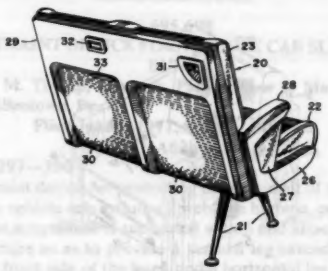
bar of a rear leg frame and a depending rim engaged by an angular support which encircles the rim.

3,695,688
MULTI-POSITION VEHICLE SEAT
Gary A. Wize, Utica, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed June 9, 1971, Ser. No. 151,357
Int. Cl. B60n *1/10*
U.S. Cl. 297—92 **6 Claims**



A multi-position seat for a vehicle including a seat back cushion and a seat cushion supported by a linkage which provides a first position wherein the seat faces forwardly, a second position wherein the seat faces rearwardly, and a third position wherein one of the seat cushions is rotated to an overlying position to permit the back portion thereof to provide a cargo area.

3,695,689
VEHICULAR SAFETY CHAIR
Chester J. Barecki, Grand Rapids, Mich., assignor to American Seating Company, Grand Rapids, Mich.
Filed April 22, 1970, Ser. No. 30,634
Int. Cl. A47c *1/12*
U.S. Cl. 297—191 **4 Claims**



A vehicle chair having a high back frame with cushions is provided with a rear panel of yieldable material anchored to the frame with a space between the panel and cushions, the

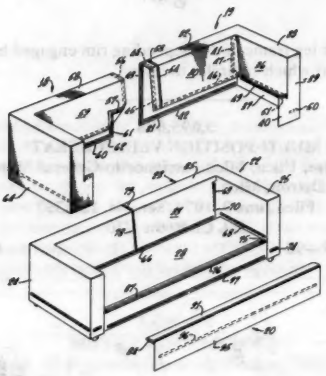
panel being cut away at an inner corner to provide a hand grip and laterally thereof provided with an ash channel opening, the panel being preferably formed to provide knee recesses into one of which the ash channel opens and the arm rest being provided with a supporting cigarette-snuffing metal panel.

3,695,690

FURNITURE COVERING ARRANGEMENT

Robert M. Carson, Pasadena, Calif., assignor to Marge Carson, Inc., Rosemead, Calif.

Filed June 11, 1971, Ser. No. 152,249
Int. Cl. A47c *31/10*
U.S. Cl. 297—218 **19 Claims**



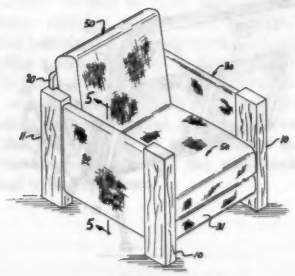
A furniture covering arrangement in which covering material is in two sections adapted to fit on opposite sides of a chair, sofa or the like, with the two sections overlapping at the center of the back where they are held together and to the frame by pressure-engageable tension-releasable fasteners, with additional fasteners holding the edges of the material sections to other portions of the frame, including the inner corners of the arms, where they are accessible through cutouts at the forward and rearward surfaces of the seat back, a removable rail at the forward edge of the seat portion carrying a removable skirt which extends downwardly along the front face of the frame.

3,695,691

REVERSIBLE CHAIR WITH A REVERSIBLE CUSHION COVER

Monroe P. Putnam, Rural Route #2, Aurora, Ind.

Filed Aug. 31, 1970, Ser. No. 68,367
Int. Cl. A47c *31/10*
U.S. Cl. 297—223 **11 Claims**



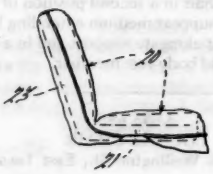
The chair has seat and back cushions with reversible covers, and reversible upholstered front, back and side panels. By reversing the covers and the panels, the decorum of the chair can be completely changed. The reversible covers have inner and outer layers of upholstery material with a layer of padding in between. The cover has two seams with the marginal edges disposed between the inner and outer layers. The method of making the cover includes placing side panels between two larger panels of a length to extend around the cushion, placing the layer of padding in overlying relationship, sewing through the stack along three sides of the side panels, and transposing the surfaces of the larger panels.

3,695,692

AUTOMOBILE SEAT COVER

Robert J. Williams, Birmingham, Mich., assignor to Cadillac Products, Inc, Warren, Mich.

Filed Sept. 28, 1970, Ser. No. 76,150
Int. Cl. A47c *31/10*
U.S. Cl. 297—229 **10 Claims**



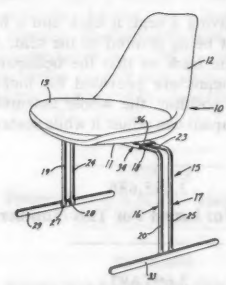
A method of preparing and using a temporary plastic seat cover for installation on automobile and vehicular seats during assembly line production, with the plastic seat cover being made, for example, of polyethylene.

3,695,693

SEAT CONSTRUCTION

Hugh C. Acton, Ross Township, Kalamazoo County, and Roy W. Fink, Portage, both of Mich., assignors to Tartan Corporation, Kalamazoo, Mich.

Filed Aug. 6, 1970, Ser. No. 61,707
Int. Cl. A47c *3/04*
U.S. Cl. 297—239 **9 Claims**



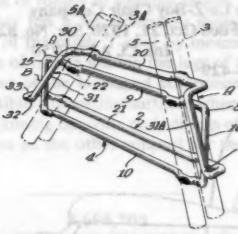
Base structure for seat means including a U-shaped support member having four upright legs defining two substantially parallel planes, said member being secured by connection means to a rigid, substantially horizontal frame member of the seat means. Said base structure and seat means may be arranged to permit stacking. A pair of runners are attached near the central portions thereof to the lower ends of the legs in parallel relationship to each other and transversely of said planes for engagement with a supporting surface.

3,695,694

GANGING AND STACKING CHAIR

Robert G. Mohr, Grand Rapids, Mich., assignor to Tartan Corporation, Kalamazoo, Mich.

Filed Oct. 12, 1970, Ser. No. 79,732
Int. Cl. A47c *1/124*
U.S. Cl. 297—248 10 Claims



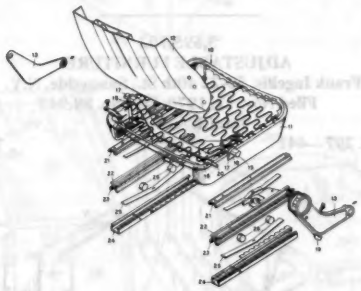
The invention is a ganging and stacking chair featuring new and improved ganging fixtures. The chairs stack vertically legs-upon-legs, with the ganging device aiding in maintaining the vertical orientation of the stack. The ganging fixtures extend across and extend beyond the side legs of the chair, to engage in front and in back of the side legs. The male section of the ganger is a rectangular wire loop, the outer ends of which extend, respectively, in front of and in back of the chair legs forming ears which are engaged by the female section. The female section is a trapezoidal wire loop with sides which slant in toward the top, and end portions which wrap over and laterally around the ears of the male sections.

3,695,695

SEAT FOR MOTOR VEHICLES

Ivo Colucci, Milan, Italy, assignor to Alfa Romeo S.p.A., Milan, Italy

Filed March 18, 1970, Ser. No. 20,529
Claims priority, application Italy, Oct. 22, 1969, 23725A/69
Int. Cl. A47c *1/02*
U.S. Cl. 297—341 4 Claims



A seat in particular a front seat for motor vehicles provided with a hinged tiltable back in which as the back tilts there is a corresponding sliding displacement of the seat in the same direction, and likewise on restoring the back into the normal position there is a corresponding sliding displacement of the seat in the direction opposite the preceding, thereby to provide better access for any back seats in two-doored motor vehicles.

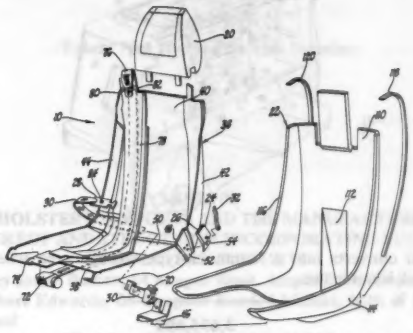
3,695,696

VEHICLE SEAT WITH INTEGRAL SEAT AND BACK PORTIONS

Thomas E. Lohr, Warren, and Robert L. Stephenson, Sterling Heights, both of Mich., assignors to Allied Chemical Corporation, New York, N.Y.

Filed Jan. 19, 1970, Ser. No. 3,816
Int. Cl. A62b *35/02*
U.S. Cl. 297—388 7 Claims

A self-contained seat and restraint system including a semirigid seat shell having a channel about the rear and sides thereof, a fixed, beltless buckle in one side of the channel, and a retractable lap belt guided through and by the other side of



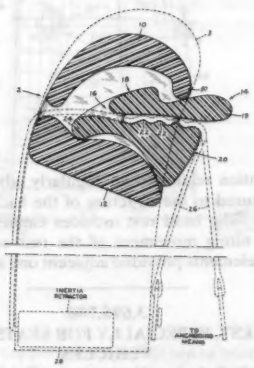
the channel. A shoulder belt and a particular buckle design is also disclosed.

3,695,697

CONTROLLED MEMORY KEEPER

Robert W. Stoffel, Ferndale, Mich., assignor to Allied Chemical Corporation, New York, N.Y.

Filed Oct. 8, 1970, Ser. No. 79,097
Int. Cl. A47c *31/00*
U.S. Cl. 297—389 10 Claims



A movable gripping device which is used with a shoulder strap in a motor vehicle safety seat belt restraint system.

3,695,698

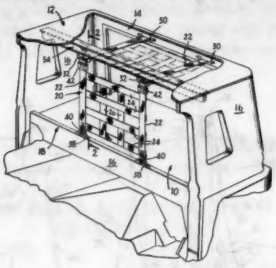
RESTRAINT DEVICE FOR VEHICLE CAB SLEEPER BUNK

Norman M. Trump, Emmaus, Pa., assignor to Mark Trucks, Inc., Allentown, Pa.

Filed June 1, 1971, Ser. No. 148,384
Int. Cl. A62b *35/60*
U.S. Cl. 297—390 8 Claims

A restraint device for protecting the occupant of the sleeper bunk of a vehicle cab includes a web-like harness, constructed of flexible straps, that is supported within and attached to the cab structure so as to provide a vertical leg extending across the open front side of the bunk and a horizontal leg extending over the bunk to the rear cab structure. This harness arrangement transmits a portion of any forwardly directed forces received by the harness to the rear cab structure, thus reducing the horizontal load imposed on the supports for the vertical leg. Quick release buckles are provided in the harness to

allow the occupant ready egress from the bunk. The harness



also converts into a hammock-type storage area when the bunk is not in use.

3,695,699

TILTING DEVICE FOR HEAD REST, IN PARTICULAR FOR VEHICLE SEATS

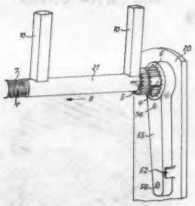
Wolfgang Mertens, Karlsruhe, Germany, assignor to Firma Kurt Herzer, Karlsruhe, Germany

Filed March 2, 1970, Ser. No. 15,458

Claims priority, application Germany, Sept. 2, 1969, P 19 44 412.3

Int. Cl. A47b *89/00*

U.S. Cl. 297—408 **4 Claims**



The invention relates to an angularly adjustable head rest which is secured to the structure of the back rest of a motor vehicle seat. The head rest includes elements providing for lateral and tilting movement of the rest subsequent to uncoupling of elements provided adjacent one side of the rest.

3,695,700

HEADREST, ESPECIALLY FOR SEATS IN MOTOR VEHICLES

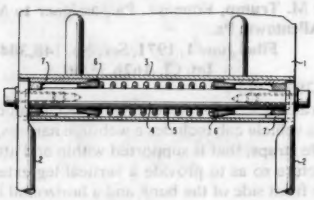
Rolf Flach, Gartringen Wurtemberg, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany

Filed April 13, 1970, Ser. No. 27,747

Claims priority, application Germany, April 12, 1969, P 19 18 680.2

Int. Cl. A47c *1/10*

U.S. Cl. 297—408 **19 Claims**



A headrest, especially for the seats in motor vehicles, in which the headrest is adjustable in its inclination against a constantly acting friction force; the adjustment is preferably stepless.

3,695,701

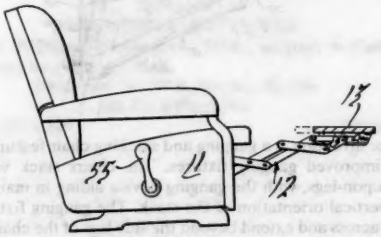
ADJUSTABLE LEG REST

Edward M. Knabusch; Edwin J. Shoemaker; David B. White, all of Monroe, and Harold P. Ruble, Deerfield, all of Mich., assignors to La-Z-Boy Chair Company

Filed Oct. 21, 1970, Ser. No. 82,587

Int. Cl. A27c *7/50*

U.S. Cl. 297—429 **12 Claims**



The leg rest of the chair is extensible from a position against the front of the seat to a position forwardly thereof. A pair of spaced scissor links support the leg rest in retracted and extended positions when actuated by a movable member such as a chair back, handle or the like. The leg rest is supported on the scissor links for forward movement thereon when extended to position the leg rest a greater distance from the front of the chair. The forward movement of the leg rest tensions springs and operate latches which retain the leg rest in a selected one of a plurality of forward positions. The latches are automatically released upon the operation of the scissor links to retract the leg rest to its position adjacent to the front of the chair which permits the springs to return the leg rest to its initial position before the end of the retractive movement of the links.

3,695,702

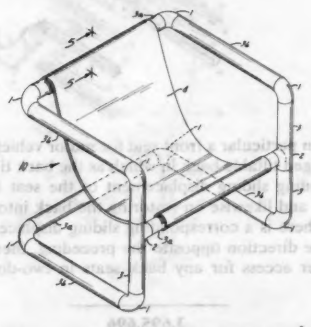
ADJUSTABLE FURNITURE

Joseph Frank Ingellis, 50-22 40th St., Sunnyside, N.Y.

Filed Nov. 12, 1970, Ser. No. 88,947

Int. Cl. A47c *7/00*

U.S. Cl. 297—441 **7 Claims**



An adjustable piece of furniture comprising three basic structural components adapted to be joined to each other for providing the basic frame structure of the piece of furniture. The three basic components are as follows: (a) an elbow-joint, (b) a T-joint and (c) a piece of tubing. The piece of furniture comprises two U-shaped components arranged parallel to each other which are joined by means of three pieces of tubing, two of said pieces of tubing joining respectively the ends

of the legs of the U-shaped components to each other, whereas the third piece of tubing joins the base members of the two U-shaped components to each other substantially at their midpoints. The legs of each one of the U-shaped components are joined to the base member by elbows. The base member, in turn, comprises a T-joint at substantially its midpoint which is joined to the elbows at opposite ends of the base member by pieces of tubing of suitable length. The T-joint in each base member has a leg extending therefrom which is joined to the leg of the other T-joint by means of a piece of tubing. The piece of tubing joining the legs of the T-joints in each base member of the U-shaped components serves as a support for a flexible supporting surface, whereas one of the pieces of tubings joining opposite ends of legs of the U-shaped components serves as the other support for the flexible support member.

3,695,703

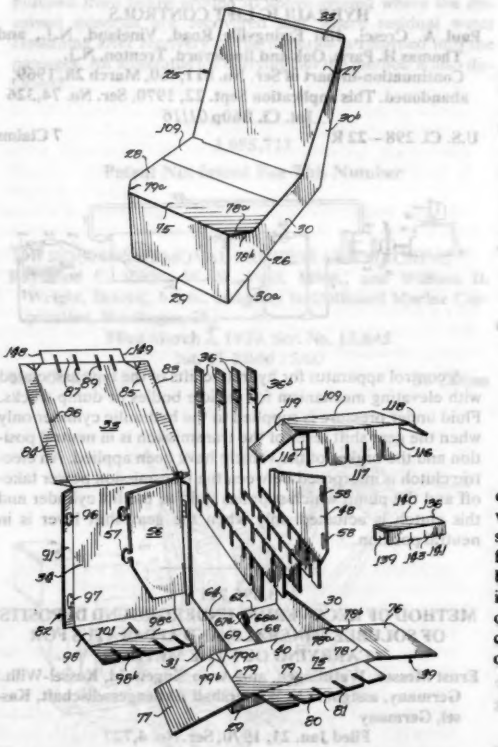
FIBER BOARD CHAIR

Michael F. Notko, North Riverside, Ill., assignor to Druth Packaging Corp., Chicago, Ill.

Filed Oct. 12, 1970, Ser. No. 80,005

Int. Cl. A47c 4/02

U.S. Cl. 297—442 **12 Claims**



A chair is formed from three blanks of sheet material of corrugated fiber board, solid fiber board, or the like, and a plurality of reinforcing ribs. The blanks are folded and interconnected to provide a base portion, a seat portion, and a back portion which entirely enclose the interior reinforcing ribs, and each edge of the chair is formed by a folded portion of the sheet material so that the flutes or interior layers of the sheet material are not exposed.

3,695,704

Patent Not Issued For This Number

3,695,705

Patent Not Issued For This Number

3,695,706

UPHOLSTERY SUPPORTS AND THE MANUFACTURE THEREOF AND STRUCTURES INCORPORATING SUCH UPHOLSTERY SUPPORTS

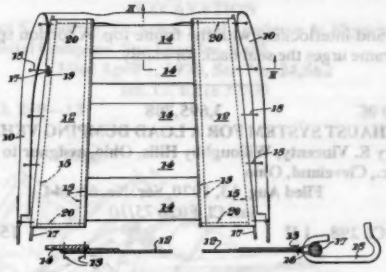
Hedley James Basher, 14 Aragen Road, Ampthill, and Leonard Robert Edwards, 25 Simpson Road, Lichfield, both of England

Filed June 1, 1970, Ser. No. 41,903

Claims priority, application Great Britain, May 30, 1969, 27,392/69

Int. Cl. A47c 7/20, 7/14

U.S. Cl. 297—452 **8 Claims**



An upholstery support which comprises at least two flexible elements (e.g. of calico) to corresponding first locations on which there are firmly secured the ends of a number of separate strips of resilient strip material (e.g. of rubberized fabric), pockets being formed at second locations on the flexible elements and support rods being accommodated or being intended to be accommodated in said pockets, whereby the opposite ends of each of a number of hooked attachment arms can be caused to engage one of said support rods and a portion of an adjacent supporting frame.

3,695,707

RECLINER VEHICLE SEAT

Chester J. Barecki, Grand Rapids, and Kenneth W. Hozeski, Grandville, both of Mich., assignors to American Seating Company, Grand Rapids, Mich.

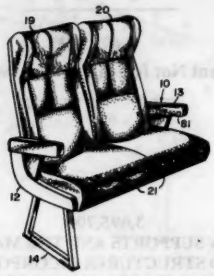
Continuation of Ser. No. 776,470, Nov. 18, 1968, Pat. No. 3,586,372. This application Nov. 19, 1970, Ser. No. 91,126

Int. Cl. A47c 3/00; B60n 1/06

U.S. Cl. 297—460 **4 Claims**

A vehicle seat has a base on which is pivotally mounted a seat back having a rigid back frame and to the back frame is releasably secured a cushion frame. A crash pad is secured to

the rigid back frame, the pad being formed of thin deformable metal covered with a plastic coating and the pad extending



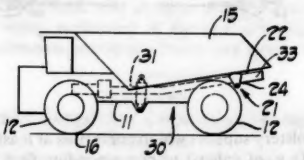
over and interlocking with the frame top. A torsion spring in the frame urges the seat back forwardly.

3,695,708

EXHAUST SYSTEM FOR A LOAD DUMPING VEHICLE

Henry E. Vincenty, Willoughby Hills, Ohio, assignor to Euclid, Inc., Cleveland, Ohio

Filed Aug. 13, 1970, Ser. No. 63,444
Int. Cl. F02b *75/10*
U.S. Cl. 298—1 H **15 Claims**



A load dumping vehicle including a frame, a gas turbine engine supported by the frame and a dump body pivotally connected to the frame for movement relative to the frame between a load carrying position and a dump position. Exhaust from the engine is ducted under the dump body through first and second exhaust ducts. Part of the exhaust flows into the dump body to heat the load. The ducts are connected at adjacent ends by a coupling structure which seals the juncture of the exhaust ducts when the dump body is in its load carrying and in its dump positions.

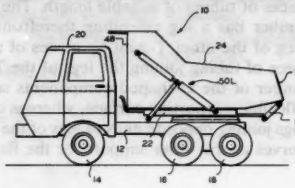
3,695,709

DUMP VEHICLE

Robert L. Reinhardt, Lubbock, Tex., assignor to Clark Equipment Company

Filed Oct. 15, 1970, Ser. No. 80,867
Int. Cl. B60p *1/30*
U.S. Cl. 298—9 **10 Claims**

A lifting mechanism for use with a vehicle adapted to transport and discharge material. The mechanism provides means for raising the elevatable end of the vehicle dump body a distance sufficient for clean dumping and for shifting the body in a selected direction relative to the vehicle so that there is a reduced tendency for the vehicle to overturn during material discharge. The mechanism comprises a first linear actuator pivotally connected at one end to the elevatable end of the dump body and an expandable truss structure connected



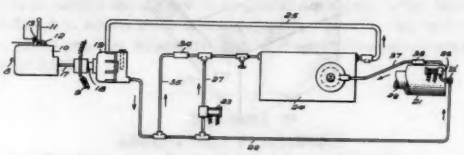
between the vehicle frame and the other end of the first actuator. The truss structure includes a second linear actuator pivotally connected between the vehicle frame and the other end of the first actuator, and a link pivotally connected at one end to the frame at a point forward of the second actuator and connected at the other end to the other end of the first actuator.

3,695,710

HYDRAULIC LIFT CONTROLS

Paul A. Cresci, 180 Ewingville Road, Vineland, N.J., and Thomas H. Paris, Oak and Boulevard, Trenton, N.J.

Continuation-in-part of Ser. No. 811,460, March 28, 1969, abandoned. This application Sept. 22, 1970, Ser. No. 74,326
Int. Cl. B60p *01/16*
U.S. Cl. 298—22 R **7 Claims**



A control apparatus for hydraulic lifts of the type associated with elevating mechanism for vehicle bodies or dump trucks. Fluid under pressure is supplied to the hydraulic cylinder only when the gear shift lever of the transmission is in neutral position and the brakes of the vehicle have been applied. An electric clutch is interposed between the transmission power takeoff and the pump which supplies fluid to the lift cylinder and this clutch is actuated only when the gear shift lever is in neutral position.

3,695,711

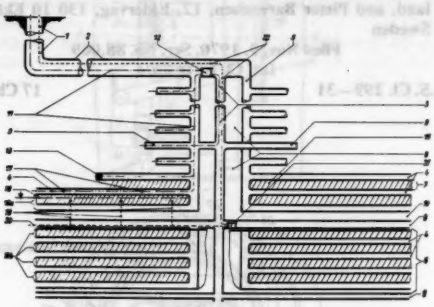
METHOD OF RECOVERING UNDERGROUND DEPOSITS OF SOLUBLE MINERALS, AND APPARATUS FOR CARRYING OUT THE METHOD

Ernst Messer, Wathlingen, and Arno Singewald, Kassel-Wilh., Germany, assignors to Wintershall Aktiengessellschaft, Kassel, Germany

Filed Jan. 21, 1970, Ser. No. 4,727
Int. Cl. E21b *43/28*
U.S. Cl. 299—2 **15 Claims**

A method of recovering underground deposits of soluble minerals, and an apparatus for carrying out the method. An access shaft is sunk to the region of the deposit and a tunnel is driven from the shaft to the deposit, whereupon an upright working shaft is advanced from the tunnel into the deposit. From the working shaft a plurality of vertically spaced substantially horizontal and at least substantially parallel flushing passages are driven into the deposit, and intermediate these

passages the deposit is formed with a plurality of slots each connecting two adjacent ones of the passages and inclined thereto. Water is forced through the passages and slots to dissolve soluble minerals from the deposit and the thus-obtained solution is collected in the respectively lower of the passages. The collected solution is at least substantially saturated with dissolved minerals by supplying it together with fresh water



through the deposit to the next lower of the passages. The saturated solution is collected underground and thereupon pumped from below ground to above ground where the dissolved minerals are recovered and where residual water remaining after recovery of the minerals is returned into the passages. An apparatus for carrying out the method is also disclosed.

3,695,712

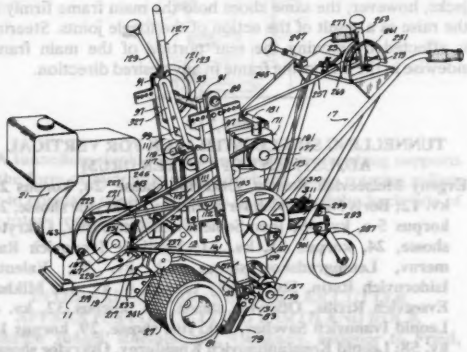
Patent Not Issued For This Number

3,695,713

ROOFING REMOVAL PROCESS AND MACHINE

Raymond C. Rothi, W. St. Paul, Minn., and William D. Wright, Detroit, Mich., assignors to Outboard Marine Corporation, Waukegan, Ill.

Filed March 2, 1970, Ser. No. 15,645
Int. Cl. E04d *15/00*
U.S. Cl. 299—10 **36 Claims**



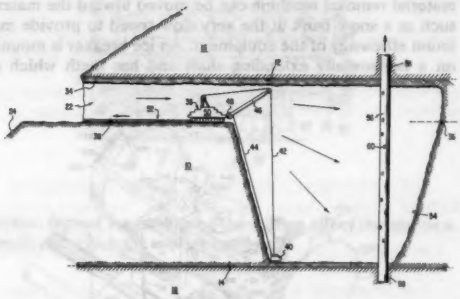
Disclosed herein is a method for stripping roofs and a roof stripping machine which includes a double-edged blade reciprocal along the path of advance of the roof stripper and means for independently advancing the stripper forwardly and rearwardly at speeds independent of blade reciprocation and of the rate of blade reciprocation and simultaneously with such reciprocation.

3,695,714

MINING VENTILATION METHOD

Cullen R. Thompson, Denver, Colo., assignor to Shell Oil Company, New York, N.Y.

Filed Oct. 16, 1970, Ser. No. 81,302
Int. Cl. E21f *1/00*; **E21c** *41/00*
U.S. Cl. 299—12 **10 Claims**



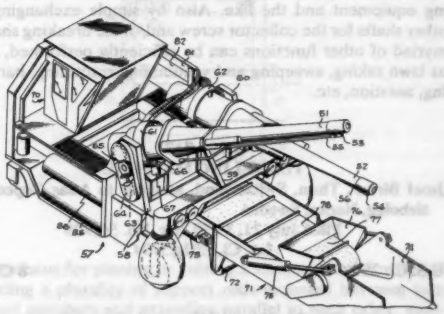
There is disclosed a method for mining relatively thick mineral seams comprising removing seam material adjacent the seam top in an advancing direction to form a passage in the seam and then removing seam material from the passage floor in a retreating direction.

3,695,715

ROCK FRACTURING METHOD AND APPARATUS FOR EXCAVATION

Charles S. Godfrey, Berkeley, Calif., assignor to Physics International Company, San Leandro, Calif.

Filed April 1, 1970, Ser. No. 24,562
Int. Cl. E21c *37/00*
U.S. Cl. 299—13 **20 Claims**



A rock fracturing method and apparatus is disclosed for excavation using hypervelocity projectiles of large mass fired against the rock from a gun using a mixture of a gaseous carbonaceous fuel, such as methane, and oxygen in the gun breech, and detonating the mixture with an electrical spark. The projectiles are formed of concrete with a plastic casing having an annular shear lip.

3,695,716

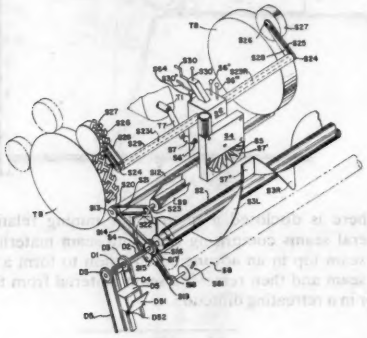
TRACTOR ATTACHMENT WITH VARIABLE SPEED DRIVE UNIT

Phillip A. Meyer, R.R. #1, Box 171, Palatine, Ill.

Filed Oct. 28, 1970, Ser. No. 84,826
Int. Cl. E01b *5/12*; **A01b** *49/00*
U.S. Cl. 299—25 **14 Claims**

An attachment for operation by a conventional tractor having the three arm support or similar attachment means and a power take-off which support and drive a material removal

machine which is power-driven by the power take-off. The material removal machine includes a screw which moves the material from the sides towards the center into a centrifugal blower which disposes of the material. The attachment also includes driving wheels which engage the driving wheels of the tractor and which is driven by an infinite control speed changer to drive the tractor wheels in either a forward or reverse direction at extremely slow speeds, whereby the material removal machine can be moved toward the material such as a snow bank at the very slow speed to provide maximum efficiency of the equipment. An ice breaker is mounted on a horizontally extending shaft and has teeth which are



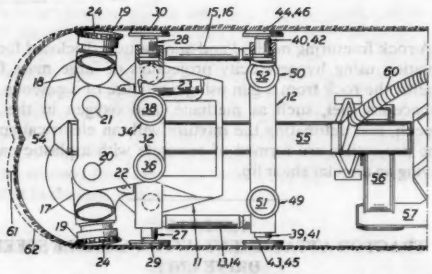
swingable to break the ice. A ditch excavating attachment is adapted for mounting on the material removal machine and driven thereby taking advantage of the slow movement of the tractor by the infinite speed adjustment. This arrangement provides for slow speed movement of the tractor with maximum speed of the material collecting, processing and blowing means and also of the ditch digging attachment. The attachment also provides an auxilliary power take-off for spraying equipment and the like. Also by simple exchanging of other shafts for the collector screw and/or ice breaking shaft, a myriad of other functions can be efficiently performed, such as lawn raking, sweeping and vacuuming, rototilling, harvesting, aeration, etc.

3,695,717

TUNNELING MACHINE

Josef Birrer, Thun, Switzerland, assignor to Atlas Copco Aktiebolag, Nacka, Sweden

Filed July 21, 1970, Ser. No. 56,909
Int. Cl. E01g *3/04*
U.S. Cl. 299—31 **8 Claims**



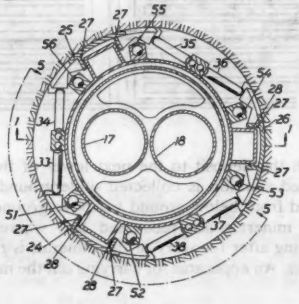
A tunneling machine having a front portion on which two swinging frames with rotating cutter heads are mounted. Four parallelly arranged double-acting hydraulic advance jacks interconnect pivotably the front portion and a rear portion. Both the front portion and the rear portion can be immobilized in the tunnel by means of gripper jacks. The advance strokes of the four advance jacks can be pre-set individually so that these jacks steer the front portion relative to the immobilized rear portion simultaneously with advancing the front portion.

3,695,718

RAISE BORING MACHINE

Ernst Abraham Lauber, 8 Meisenweg, 3600 Thun, Switzerland, and Pieter Barendsen, 12, Ejdervag, 130 10 Ektorp, Sweden

Filed Nov. 9, 1970, Ser. No. 88,069
Int. Cl. E01g *3/04*
U.S. Cl. 299—31 **17 Claims**



A raise boring machine for producing a raise of circular cross section has a main frame with a rotating drum which has two rotating tangentially cutting heads. Three wall engaging shoes are suspended in rods in toggle arrangements and they are biased outwardly against the wall of the raise by means of spring devices braced between the shoes. By this arrangement these shoes guide the machine by sliding on the wall during a cutting advance of the main frame effected by means of six advance jacks connected between the main frame and a rear anchoring frame. During the time that the anchoring frame is released from the raise and pulled forward by the advance jacks, however, the same shoes hold the main frame firmly in the raise as a result of the action of the toggle joints. Steering is effected by moving the rear portion of the main frame sidewise in the anchoring frame in any desired direction.

3,695,719

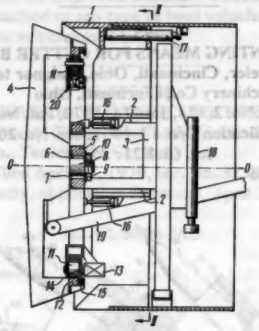
TUNNELLING SHIELD WITH JACK FOR VERTICAL ADJUSTMENT OF CUTTER DRUM

Evgeny Moiseevich Bolotin, Otkrytoe shosse, 24, korpus 25, kv. 12; Boris Nikolaevich Ierusalimsky, Otkrytoe shosse, 24, korpus 5-a, kv. 45; Igor Semenovich Ostrovsky, Otkrytoe shosse, 24, korpus 31, kv. 21; Vladimir Ivanovich Razmerov, Leningradskoe shosse, 62, kv. 90; Valentin Isidorovich Ratin, Studenitsky proezd, 6, kv. 12; Mikhail Evseevich Rivilis, Otkrytoe shosse, 24, korpus 32, kv. 4; Leonid Ivanovich Saveliev, Otkrytoe shosse, 29, korpus 11, kv. 58; Leonid Konstantinovich Khaidurov, Otkrytoe shosse, 24, korpus 5-g, kv. 31; Vladimir Alexandrovich Khodosh, ulitsa Burdenko, 16, kv. 16, and Nikolai Dmitrievich Pisarev, Otkrytoe shosse, 24, korpus 5-a, kv. 20, all of Moscow, U.S.S.R.

Filed Aug. 17, 1970, Ser. No. 64,265
Int. Cl. E01g *3/03*
U.S. Cl. 299—33 **8 Claims**

A tunnelling shield comprising a means for vertical dis-

placement of the rotary rock-cutting member with respect to its frame and the shield axis.



3,695,720

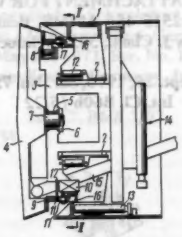
TUNNELLING SHIELD

Evgeny Moiseevich Bolotin, Otkrytoe shosse, 24, korpus 25, kv. 12; Boris Nikolaevich Ierusalimsky, Otkrytoe shosse, 24, korpus 5-a, kv. 45; Igor Semenovich Ostrovsky, Otkrytoe shosse, 24, korpus 31, kv. 21; Vladimir Ivanovich Razmerov, Leningradskoe shosse, 62, kv. 90; Valentin Isidorovich Ratin, Studenitsky Proezd, 6, kv. 12; Mikhail Evseevich Rivilis, Otkrytoe shosse, 24, korpus 32, kv. 4; Leonid Ivanovich Saveliev, Otkrytoe shosse, 29, korpus 11, kv. 58; Leonid Konstantinovich Khaidurov, Otkrytoe shosse, 24, korpus 5-g, kv. 31; Vladimir Alexandrovich Khodosh, ulitsa Burdenko, 16, kv. 16, and Nikolai Dmitrievich Pisarev, Otkrytoe shosse, 24, korpus 5-a, kv. 20, all of Moscow, U.S.S.R.

Filed Aug. 21, 1970, Ser. No. 66,033

Int. Cl. E01g *3/04*

U.S. Cl. 299—33 **9 Claims**



A tunnelling shield provided with shock absorbing supports in the form of hydraulic jacks which via freely rotating rollers are in constant contact with the periphery of the back side of the rotary rock-cutting member.

3,695,721

INTERNALLY VIBRATED ROLLER CUTTER APPARATUS FOR CUTTING EARTH AND ROCK

Heinrich Jungel, Rheinhausen, Germany, assignor to Fried, Krupp Gesellschaft mit beschrankter Haftung, Essen, Germany

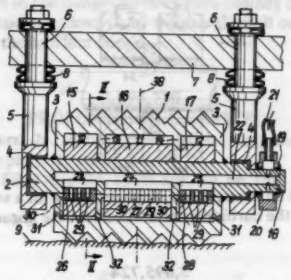
Filed Oct. 13, 1970, Ser. No. 80,398

Claims priority, application Germany, Oct. 24, 1969, P 19 53 550.3

Int. Cl. E21c *25/10*

U.S. Cl. 299—37 **11 Claims**

A roller tool, such as a chisel, especially for mining in which vibratory forces are developed inside the tool in the working direction thereof for enhancing the cutting effect thereof on a formation to which the tool is presented.



3,695,722

APPARATUS FOR TREATING OR DIGGING INTO SURFACES AND CUTTING MEMBERS FOR THIS APPARATUS

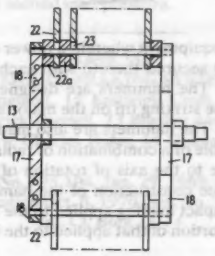
Ernest Sidney Fairweather, London, and Jim Furby, Kirby Muxloe, both of England, assignors to Errut Products Limited, London, England

Filed Feb. 18, 1970, Ser. No. 12,336

Claims priority, application Great Britain, Feb. 27, 1969, 10,628/69

Int. Cl. E01c *23/09*

U.S. Cl. 299—39 **13 Claims**



Apparatus for planing or cutting a surface of hard material including a plurality of support rods mounted between two support members and extending parallel to each other, each support shaft carrying a plurality of cutting members or tines rotatably mounted thereon through elongated aperatures and moving means for rotating the support members in an orbital path so that, after impact with the surface of material, the cutting members can be returned to a position approximately along the radial component extending outwardly from the orbital path before the next succeeding impact of that cutting member.

3,695,723

ABRADING TOOL

John F. Kita, and James W. Heaton, both of Greensburg, Pa., assignors to Kennametal Inc., Latrobe, Pa.

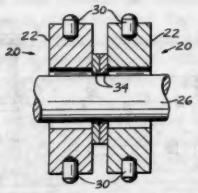
Filed July 28, 1970, Ser. No. 58,925

Int. Cl. B24b *23/00*; E01c *23/09*

U.S. Cl. 299—40 **7 Claims**

The specification discloses an abrading tool in which rings having hard metallic carbide inserts therein are loosely mounted in side by side relation on a shaft and which shaft, in

turn, is mounted in a reel together with other like shafts so that as the reel rotates on an axis parallel to the shafts, the abrading



elements will be brought into engagement with a surface to be abraded and the carbide inserts will effect the abrading.

3,695,724

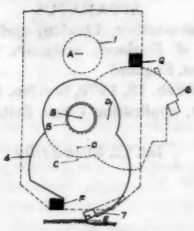
ROTARY IMPACT ROCK BREAKING EQUIPMENT

Richard Francis Taylor, Johannesburg, Transvaal Province, Republic of South Africa, assignor to Anglo-Transvaal Consolidated Investment Company Limited, Johannesburg, Republic of South Africa

Continuation-in-part of Ser. No. 774,061, Nov. 7, 1968, abandoned. This application Sept. 8, 1970, Ser. No. 70,309

Int. Cl. E21c *25/02*

U.S. Cl. 299—69 **12 Claims**



Rock breaking equipment wherein a power driven rotor has hammers pivotally secured thereto with each hammer carrying a striking tip. The hammers are designed as compound pendulums with the striking tip on the major axis of symmetry for the pendulum. The hammers are also made to ensure that they are also capable of a combination of radial and rotational movement relative to the axis of rotation of the rotor. As a result of the unique construction of the hammers and rotor, the operational impact loading applied to the hammer pivot is only a minor proportion of that applied to the hammer striking tip.

3,695,725

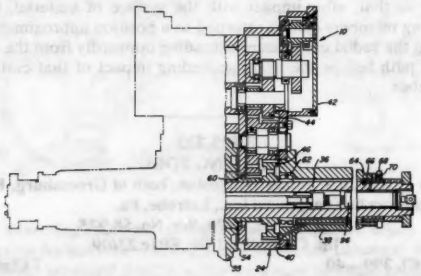
MINING MACHINE DRUM CUTTER

Eugene F. Pendolino, 419 Eleventh St., Franklin, Pa.

Filed Sept. 23, 1970, Ser. No. 74,766

Int. Cl. E21c *25/10*

U.S. Cl. 299—80 **10 Claims**



A mining and loading apparatus and more particularly a continuous mining apparatus having improved means for supporting and driving the cutter drum assembly from a floating axle shaft at the forward end thereof.

3,695,726

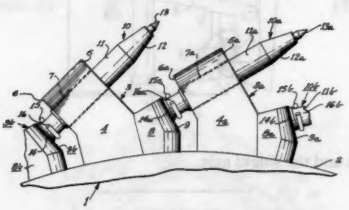
MOUNTING MEANS FOR CUTTER BITS

Claude B. Krekeler, Cincinnati, Ohio, assignor to The Cincinnati Mine Machinery Co., Cincinnati, Ohio

Division of Ser. No. 2,874, Jan. 14, 1970, Pat. No. 3,627,381. This application Dec. 13, 1971, Ser. No. 207,410

Int. Cl. E21c *25/46*

U.S. Cl. 299—86 **10 Claims**



Mounting means for cutting tools of the type having an elongated shank of circular cross section, a hard cutting tip at one end and an abutment surface at the other end. The mounting means comprises a body having a forward surface, a rearward surface and a shank receiving perforation extending through the body from the forward surface to the rearward surface. The shank receiving perforation is of such diameter as to permit free rotation of the cutting tool shank therein and is of such length that the abutment end of the cutting tool shank extends beyond the rear surface of the body. The body is mounted on a driven element of a mining machine. An abutment means is provided in association with the driven element, the abutment means presenting an abutment surface cooperating with the abutment surface on the cutting tool shank and spaced from the rear surface of the mounting means body.

3,695,727

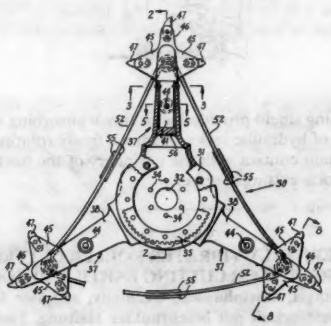
TRACTION ATTACHMENT FOR VEHICLES

Julius Sesky, CMR 2515 456 AMMS, Beale Air Force Base, Calif., and Charles J. Clark, 3023 Winlock Road, Torrance, Calif.

Filed Sept. 25, 1970, Ser. No. 75,444

Int. Cl. B60b *15/22*

U.S. Cl. 301—43 **7 Claims**



A traction attachment for vehicles which consists of a spoked hub having three or more spokes extending outwardly therefrom and mounted on a center rotatable hub for meshing with obstacles in the terrain. The hub is provided with a sprocket or gear over which a drive chain or actuator is trained extending from an engine. The axis of the spoked hub

varies from the horizontal to nearly vertical. In a modified form of the invention a belt is secured to the spoked hub to extend thereabout for improved floatative traction. The spoked hub can be attached to any type of land vehicle, water vehicle or snow and ice vehicles as required.

3,695,728

DOUBLE-DISK VEHICLE WHEEL

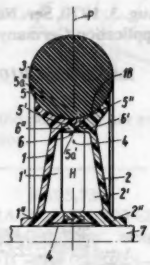
Berthold Haussels, Tente/Rhineland, Germany, assignor to Happe & Co., Tonisheide, Germany

Filed April 27, 1970, Ser. No. 32,208

Claims priority, application Germany, April 29, 1969, P 19 21 736.8

Int. Cl. B60b *5/02*

U.S. Cl. 301—63 DD **4 Claims**



A double-disk vehicle wheel whose synthetic-resin wheel disks are centered upon a common axis and are mutually juxtaposed to define a tire seat along the outer peripheries of the disks. An annular tire is mounted upon the tire seat, and an axially extending barb, connected with one of the disks and a recess formed in the other disk for receiving the barb define a resiliently deformable snap coupling joining the disks together.

3,695,729

PLASTIC BICYCLE WHEEL ASSEMBLY AND MOLD FOR MAKING THE SAME

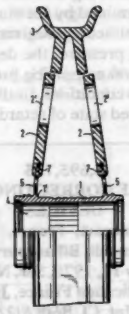
Hans Joachim Schwerdhofer, Schweinfurt, Germany, assignor to Fichtel & Sachs AG, Schweinfurt, Germany

Filed May 27, 1971, Ser. No. 147,511

Claims priority, application Germany, June 2, 1970, P 20 26 837.5

Int. Cl. B60f *5/02*

U.S. Cl. 301—63 PW **16 Claims**



The hub shell and rim of a bicycle wheel are connected by a spoke system of thermoplastic synthetic resin composition forming a unitary body with the rim. The spoke system may consist either of two conical discs or two conical sets of four individual spokes defining therebetween gaps axially aligned with the spokes of the other set. Flanges on the hub are embedded in the discs or spokes. The transmission of thermal energy generated by friction in a transmission or a brake within the hub to the plastic spoke system is impeded by air-filled recesses in the flanges or elsewhere radially between the hub and the spoke system, or by the use of small engaged contact faces on the hub and flange.

3,695,730

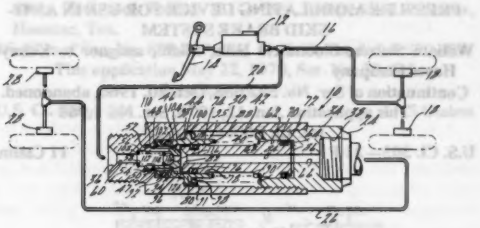
PROPORTIONING DEVICE

David T. Ayers, Jr., Birmingham, Mich., assignor to Kelsey-Hayes Company, Romulus, Mich.

Filed Aug. 24, 1970, Ser. No. 66,250

Int. Cl. B60t *8/26*

U.S. Cl. 303—6 C **18 Claims**



A device for varying the proportion of brake pressure delivered to the front and rear brakes of a vehicle having a differential area piston for decreasing the proportion delivered to the rear brake between first and second inlet pressures, and an additional member for abutment with the differential area piston to provide a composite structure having a lesser area differential so as to establish an increasing, fixed or decreasing offset between the pressure delivered to the front and rear brakes above the second inlet pressure.

3,695,731

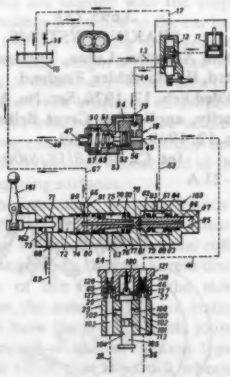
VEHICLE BRAKING SYSTEM

Michael John England, 15 Eastleigh Croft, Walmley Sutton Coldfield; Derrick Donnell, 73 Rosslyn Ave., Coundon Conventry, and Eric Charles Hales, 16 Gunners Lane, Studley, all of England

Division of Ser. No. 795,104, Jan. 29, 1969, abandoned. This application Oct. 8, 1970, Ser. No. 79,245

Int. Cl. B60t *13/14*

U.S. Cl. 303—7 **12 Claims**



A dual purpose hydraulic accumulator is adapted to store hydraulic fluid and to release a spring to apply vehicle brakes mechanically in the event of loss of hydraulic pressure. A cylindrical cavity in a fixed body member is divided by a free

piston into a pressure chamber for hydraulic fluid and a spring chamber, preferably a gas cushion. A second piston exposed to one of these chambers serves to compress the brake spring.

The dual purpose accumulator may be fitted to a trailer having hydraulic brakes and adapted to be hitched to a tractor. A metering valve on the tractor serves to controllably connect the accumulator to the hydraulic actuators. The tractor and trailer lines are releasably interconnected by a quick-release, twin-line, self-sealing hydraulic coupling. The accumulator and brake lines on the trailer are automatically interconnected to apply the trailer brakes hydraulically in the event of trailer breakaway. The accumulator can be charged from a constant volume hydraulic pump utilizing an unloader valve.

3,695,732

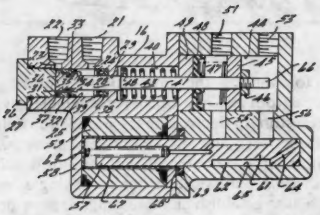
PRESSURE MODULATING DEVICE FOR USE IN ANTI-SKID BRAKE SYSTEM

William Stelzer, Bloomfield Hills, Mich., assignor to Kelsey-Hayes Company

Continuation of Ser. No. 592,688, Oct. 20, 1966, abandoned. This application Jan. 12, 1970, Ser. No. 1,968

Int. Cl. B60t *8/12, 8/26*

U.S. Cl. 303—21 F **11 Claims**



A pressure proportioning and control mechanism for the fluid supplied to the cylinders of the brakes at the front and rear wheels of a vehicle, the mechanism including a proportioning device having a plungerand adapted to reduce the pressure on the rear wheels relative to the front wheels as the master cylinder pressure is increased, a piston on the plunger, a cylinder for the piston having an inlet and outlet port, means including a source of actuating fluid ancillary to the brake actuating fluid and responsive to a rapid deceleration of a wheel to rapidly reduce the braking pressure thereon, and a solenoid valve controlling the flow of fluid between the ports.

3,695,733

BRAKING SYSTEMS

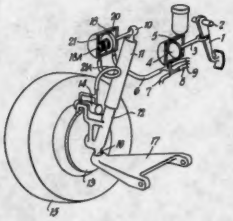
Howard Kenneth Alderton, Luton, England, assignor to Cam Gears Limited, Hertfordshire, England

Filed Feb. 17, 1970, Ser. No. 12,092

Claims priority, application Great Britain, Feb. 18, 1969, 8,697/69; Dec. 12, 1969, 60,673/69

Int. Cl. B60t *8/18, 8/00*

U.S. Cl. 303—21 A **9 Claims**



A braking system in which pressure from a master cylinder acting in slave cylinders at the brakes carries initial or low-force braking dependent on the driver's pedal force, there being a mechanical feed-back mechanism which increases the braking pressure in accordance with the mechanical force resulting from brake reaction in the vehicle, e.g. torque or drag. The hydraulic braking force is therefore augmented by fed-back force and in that sense provides a servo effect.

3,695,734

ANTI-WHEEL SLIDE APPARATUS FOR VEHICLES

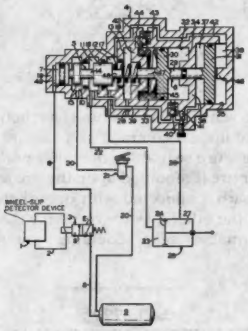
Karl-Friedrich Hennig, Ricklingen; Erich Reinecke, Beinhorn; Herbert Merz, Hannover; Egon Werner, Bordenau; Fritz Isernhagen, Letter; Erwin Holthusen, Berenbostel, and Alfred Klatt, Wettbergen, all of Germany, assignors to Westinghouse Bremsen und Apparatebau G.m.b.H., Hannover, Germany

Filed Aug. 3, 1970, Ser. No. 60,286

Claims priority, application Germany, Sept. 15, 1969, P 19 46 635.4

Int. Cl. B60t *8/10*

U.S. Cl. 303—21 F **10 Claims**



Apparatus for preventing vehicle wheel-slide during braking operations by detecting occurrence of wheel-slip and responding to such wheel-slip at a degree short of wheel-lock or slide, said degree being determined by the condition of the road surface, for effecting, in timed cycles, reduction and reapplication of brake-applying pressure, the degree of said reduction and reapplication of brake-applying pressure varying according to variance in road conditions, until the vehicle is brought to a stop or to the desired state of retardation.

3,695,735

BRAKING PRESSURE CORRECTING VALVE CONTROL DEVICES

Michel Guettier, Billancourt, France, assignor to Regie Nationale des Usines Renault, Billancourt, France

Filed May 18, 1970, Ser. No. 38,307

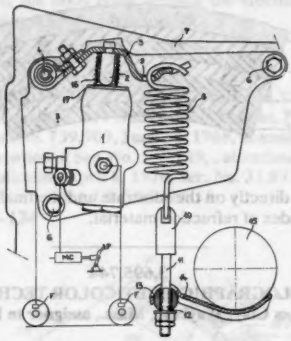
Claims priority, application France, June 4, 1969, 6918314

Int. Cl. B60t *8/22*

U.S. Cl. 303—22 R **5 Claims**

A device for controlling a braking pressure correcting valve which comprises a movable member such as a piston, the position of which determines the operating characteristics of the braking pressure correcting valve, and the device includes such a valve mounted between a sprung portion and an unsprung portion of a vehicle and includes a resilient member

and a push member cooperatively acting with a movable piston wherein the resilient member exerts a permanent force



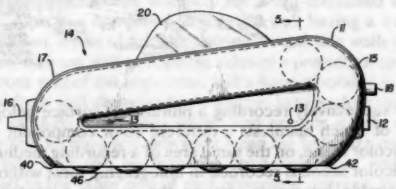
against the piston and the push member exerts only a temporary force against the piston.

3,695,736

ENDLESS-TRACK-SUPPORTED VEHICLE

Arnold E. Brown, Nashville, Tenn., assignor to Kusan, Inc., Nashville, Tenn.

Filed Sept. 3, 1970, Ser. No. 69,313
Int. Cl. B62d *55/18*
U.S. Cl. 305—18 **5 Claims**



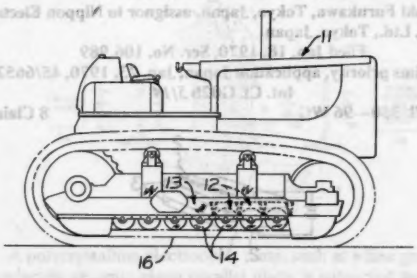
A supporting endless track for vehicles of any type comprising a plurality of ground engaging balls or rollers which are confined in a race and which successively move into ground engagement during vehicle movement.

3,695,737

RESILIENT MOUNTING FOR TRACK ROLLERS

George F. Alexander, Pekin; Orville E. Kessinger, Jr., Mackinaw; John R. Rediger, Washington, and Harold L. Reinsma, Dunlap, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Sept. 2, 1970, Ser. No. 69,028
Int. Cl. B62d *55/16*
U.S. Cl. 305—27 **6 Claims**



An arrangement for resiliently mounting track rollers to the track roller frame of a tractor or other track laying vehicle wherein preloaded resilient pads are employed to provide a firm mounting under normal conditions while deflecting under shock loads to dampen shock load vibrations. The mounting permits independent removal of each roller without disturbing its preload condition.

3,695,738

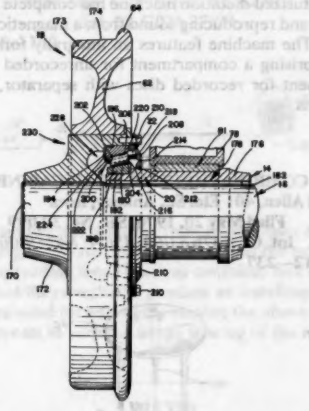
Patent Not Issued For This Number

3,695,739

ROLLER BEARING ARRANGEMENT FOR RAILROAD CAR TRUCK

Alfred H. Oelkers, deceased, late of 424 Normandy, San Antonio, Tex., and Thomas C. Gerber, independent executor, Houston, Tex.

Division of Ser. No. 688,037, Dec. 5, 1967, Pat. No. 3,570,409.
This application May 22, 1970, Ser. No. 38,645
Int. Cl. F16c *19/14*
U.S. Cl. 308—211 **3 Claims**



The invention relates to a railroad car truck in which the side frames are carried inboard of the wheels on supports that are stationary relative to the side frames. The side frames are provided with spring seats that are substantially aligned with the planes of the wheels on either side of the truck and support through spring groups a bolster of special design that supports the weight of the car body at two points on either side of the bolster, which points are aligned with the respective spring groups. The truck bolster is pivoted to the car body bolster by the usual kingpin, but the coupling arrangement involved is such that none of the body weight is supported at the customary center plate area of the bolster, which area is eliminated in the present truck. The truck bolster at its midportion includes a socket structure into which a projection of the body bolster fits for applying longitudinally and laterally acting forces to the bolster from which they are transferred to the side frames through suitable engaging surfaces.

In one form of the invention, the side frames are mounted on tubular housings for the axles, which housings are journalled relative to the wheels through special roller bearing or friction bearing arrangements that are herein disclosed.

In another form of the invention, the side frames are mounted directly on the axles, which are stationary relative thereto, and which have the truck wheels journalled on the respective ends through a special friction type bearing arrangement, with the result that the truck wheels rotate independently of each other.

3,695,740

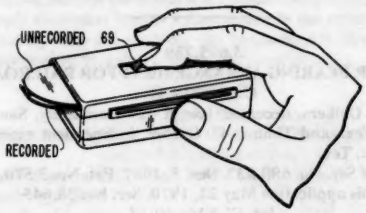
Patent Not Issued For This Number

3,695,741

MINATURE DISC DICTATION MACHINE FEATURING INTEGRAL DISC STORAGE

William L. Dollenmayer, Lexington, Ky., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 18, 1970, Ser. No. 99,567
Int. Cl. A47b 81/06
U.S. Cl. 312—10 2 Claims



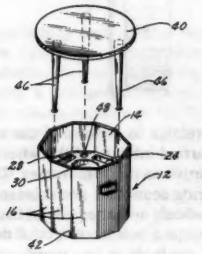
A miniaturized dictation machine has complete facilities for recording and reproducing sound from a magnetic disc record medium. The machine features an integrally formed storage area comprising a compartment for unrecorded discs and a compartment for recorded discs with separator, guide, and eject means.

3,695,742

COMBINATION TABLE BAR CABINET

Elmo Paul Allen, 401 Elm St., Ankeny, Iowa

Filed May 20, 1970, Ser. No. 39,099
Int. Cl. A47b 83/00, 85/04; A47c 9/00
U.S. Cl. 312—237 9 Claims



A furniture unit including a cabinet enclosure having a chamber therein and a shelf in the chamber intermediate the ends to provide a top and bottom compartment. A table top member having legs is adapted to cover the chamber with the legs extending through openings in the shelf. In another position the table top member may be used as a table separate from the cabinet and thereby exposing the chamber and shelf in the cabinet. A plurality of receptacles are provided in the shelf for storing ice and bottles when the top member is on the cabinet and exposing them for use when the top member has been removed.

3,695,743

OPTICAL REFLECTOR

Arthur I. Bodkins, Winthrop, Mass., assignor to M. James Zelman, Boston, Mass., trustee

Filed March 16, 1970, Ser. No. 19,763
Int. Cl. G02b 13/14, 5/28
U.S. Cl. 350—1 1 Claim

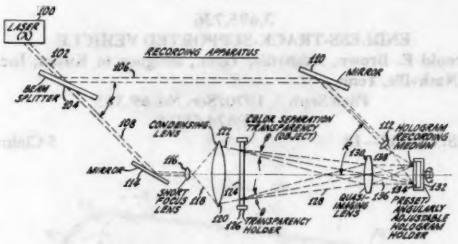
An optical reflector is disclosed having a glass base substrate which may be in a spherical form. The substrate has six thin alternate high and low index of refraction dielectric layers vacuum deposited on it. The high index material is first deposited directly on the substrate and the finally deposited is of a low index of refraction material.

3,695,744

HOLOGRAPHIC MULTICOLOR TECHNIQUE

Burton Ross Clay, Wayland, Mass., assignor to RCA Corporation

Filed Jan. 14, 1971, Ser. No. 106,485
Int. Cl. G02b 27/00
U.S. Cl. 350—3.5 5 Claims



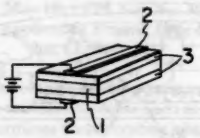
By successively recording a plurality of surface holograms, each of which manifests a different color component of any multicolor scene, on the same area of a recording medium, the multicolor scene is recorded in holographic form without any undesirable interaction among the various recorded holograms. This is accomplished by choosing a different meridional angle with respect to the recording medium for each separate hologram. During playback, by simultaneously illuminating the recorded multicolor scene in holographic form with separate beams of light, which need not be coherent, each of which corresponds in color to the color manifested by a different one of the plurality of recorded holograms, a multicolored image of the recorded scene is reconstructed. This is accomplished by angularly orienting each of the colored beams of light with respect to the recording medium in correspondence with the meridional angle of the one of the plurality of holograms manifesting that color.

3,695,745

LIGHT WAVE GUIDE CIRCUIT

Motoaki Furukawa, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Jan. 18, 1970, Ser. No. 106,989
Claims priority, application Japan, Jan. 23, 1970, 45/6652
Int. Cl. G02b 5/14
U.S. Cl. 350—96 WG 8 Claims



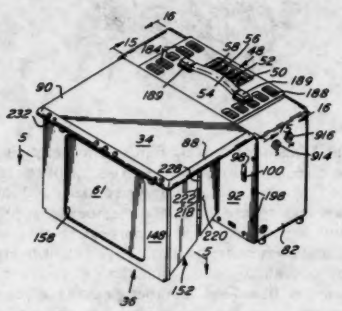
A light wave guide circuit includes a transparent body capable of exhibiting the electro-optical effect. Electrodes are

formed according to a preselected pattern on at least one surface of the body such that when a voltage is applied to the electrode, a variation is produced in the index of refraction of that portion of the body lying beneath the electrode thereby forming a selective light path in the body.

3,695,746
COLLAPSIBLE SCREEN ASSEMBLY

Donald A. Youngblood, 111 Dolly Lane, Chalfont, Pa.

Division of Ser. No. 739,909, June 14, 1968, abandoned, which is a continuation of Ser. No. 535,149, , abandoned. This application April 6, 1970, Ser. No. 31,071
Int. Cl. G03b 21/58
U.S. Cl. 350—124 **8 Claims**

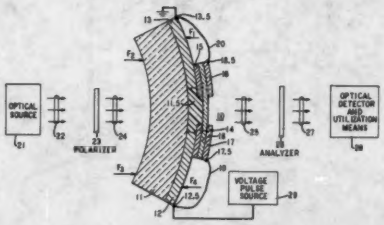


A collapsible screen assembly for a self-contained audio-visual apparatus comprising a forward wall having a translucent screen, a pair of foldable, spring-loaded side walls securing said forward wall to opposite sides of a projection opening in a front wall of the apparatus, and a hood pivotably secured to said front wall above said side walls so as to enclose said forward and side walls when folded and provide a light shield above said forward and side walls when the latter are opened. One side wall can be detached from said front wall and secured to the other side of said projection opening, thereby to provide a front screen projector. The assembly includes various brackets, locating posts, and other members, for facilitating operation, locking, and alignment of the screen assembly.

3,695,747
OPTICAL TRANSMISSION SYSTEM INCLUDING STRAIN-BIASED ELECTROOPTIC CERAMIC DEVICES

Juan Ramon Maldonado, Berkeley Heights, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkely Heights, N.J.

Filed June 4, 1971, Ser. No. 149,996
Int. Cl. G02f 1/24
U.S. Cl. 350—150 **13 Claims**



A polycrystalline electrooptic plate, such as a fine grain ferroelectric ceramic plane parallel plate, is subjected to a constant (in time) and uniform (in space) tensile stress along an axis of tension in the plane of the plate. A pair of electrode layers on a major surface of the plate define a gap in the plate, the gap running along a direction at an oblique angle with respect to the axis of tension. Control voltage pulses are applied across these electrodes to produce electric fields in the plane of the plate across the gap, thereby producing a controllable birefringence in the plate with respect to optical radiation propagating normal to the plate in the gap. By locating this place between an optical polarizer and analyzer, an optical switch ("light gate") can be formed with simple electrical access to the electrode layers.

3,695,748
Patent Not Issued For This Number

3,695,749
APPARATUS FOR PRODUCING AN INTERFERENCE PATTERN

Thomas T. Stapleton, Bloomfield Hills, Mich., assignor to General Motors Corporation, Detroit, Mich.

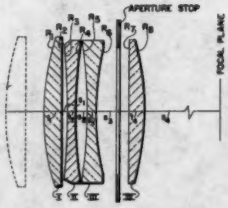
Filed Aug. 7, 1970, Ser. No. 62,012
Int. Cl. G02b 27/00
U.S. Cl. 350—163 **4 Claims**

A beam splitter and a mirror form from a laser beam a pair of converging collimated beams directed to the primary focal point of a spreading lens. The lens combines and spreads the beams so that they overlap to produce an interference zone. A device is provided for adjustably moving the above-mentioned optical elements to vary the fringe spacing of the interference pattern.

3,695,750
COMPACT FOUR ELEMENT OBJECTIVE LENS

James G. Baker, Winchester, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Continuation-in-part of Ser. No. 774,141, Nov. 7, 1968, Pat. No. 3,619,036. This application July 28, 1971, Ser. No. 166,933
Int. Cl. G02b 9/36
U.S. Cl. 350—221 **2 Claims**



A compact air-spaced four element photographic objective lens is shown with an overall length less than one-tenth its focal length. Chromatic and spherical aberrations, coma, astigmatism, field curvature, and distortion are corrected. Focusing is accomplished by a movable first element. The corrections are optimum when the objective focuses a subject approximately nine focal lengths distant. The ratio of the minimum Abbe ν value of the first and fourth elements to the maximum Abbe ν value of the second and third elements (i.e., Baker's Ratio) is 0.91. The Petzval sum is 0.199.

3,695,751

HEMISPHERICAL MOTION PICTURE SCREEN

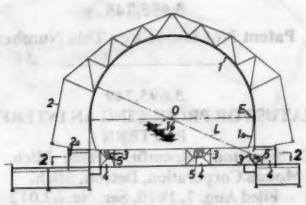
Toshio Watanuki, Tokyo, Japan, assignor to The MIDORI-KAI Co., Ltd., Minamiku, Osaka, Japan

Filed Oct. 26, 1970, Ser. No. 84,050

Claims priority, application Japan, Oct. 30, 1969, 44/87438; Oct. 30, 1969, 44/87439

Int. Cl. G03b *37/04*

U.S. Cl. 352—70 **3 Claims**



A hemispherical motion picture screen is provided with a spherical or arcuate lower extension, and the screen is comprised of a plurality of individual screen strips. The screen is in the form of a sphere which is truncated below the equator, the lower extension extending downwardly below the equator of the screen and being a continuation of the spherical shape so that dead zones in the projected image are eliminated. The spherical shape of the screen is provided by a plurality of frame units, each of which includes a plurality of generally horizontally disclosed screen strips. The screen strips are positioned in overlapping relationship with their disclosed faces directed downward.

3,695,752

CINE CAMERA

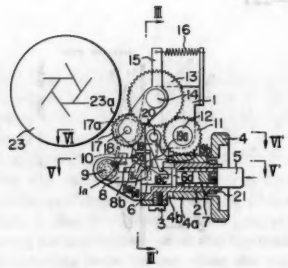
Hideyo Nozawa, Tokyo, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed Aug. 10, 1970, Ser. No. 62,309

Claims priority, application Japan, Aug. 16, 1969, 44/77980

Int. Cl. G03b *7/08*

U.S. Cl. 352—141 **10 Claims**



A cine camera with an automatic exposure control system has a device for temporarily maintaining the aperture diaphragm in a desired stop position or for manually controlling the diaphragm. A shaft is manually displaced along a path of travel against a biasing force to provide manual engagement with the diaphragm to maintain or position the diaphragm and to disconnect the automatic exposure control circuit.

3,695,753

MECHANISM FOR MOVING MOVIE PROJECTOR FILM INTERMITTENTLY IN NORMAL AND REVERSE DIRECTIONS

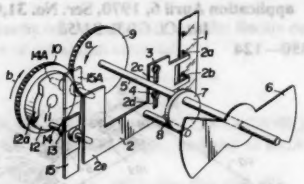
Makoto Kurasawa, Tokyo, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan

Filed Nov. 5, 1970, Ser. No. 87,275

Claims priority, application Japan, Nov. 20, 1969, 44/110899

Int. Cl. G03b *1/22*

U.S. Cl. 352—173 **3 Claims**



A mechanism for moving film intermittently in normal and reverse directions, for a movie projector of the type having a film feed member operated by first and second cams, with the first cam reciprocating the feed member longitudinally of the film and the second cam reciprocating the feed member toward and away from the film, the two cams being driven by a shutter operating shaft, includes a follower interposed between the film feed member and the second cam. The direction in which the film is moved by the feed member can be switched between normal and reverse by shifting the follower on the surface of the second cam through an angle of at least 120° with respect to the axis of the cam. The angle through which the follower is shifted varies in dependence on the number of blades of the shutter of the projector.

ERRATUM

For Class 353—19 see:
Patent No. 3,695,580

3,695,754

ELECTROPHOTOGRAPHIC APPARATUS FOR COPYING DOCUMENTS OF VARIOUS THICKNESSES

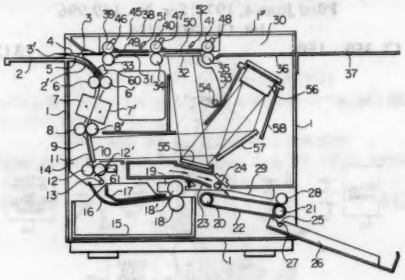
Takaji Washio, Toyonaka; Yasusuke Tohi, Ikeda, and Tatsuo Aizawa, Osaka, all of Japan, assignors to Mita Industrial Company Limited, Higashi-ku, Osaka, Japan

Filed May 25, 1970, Ser. No. 40,009

Claims priority, application Japan, May 28, 1969, 44/41452

Int. Cl. G03g *15/00*

U.S. Cl. 355—3 **8 Claims**



An electrostatic copying machine including apparatus for transporting single sheet original documents or books past an exposure station. All originals are transported and supported by a set of drive rollers along a horizontal path at the top of the machine. To transport single sheet originals a set of opposing

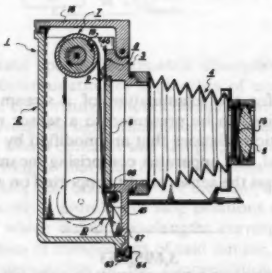
idler rollers, each extending adjacent to the central portion of a drive roller and biased downward toward that roller, cooperates with the drive rollers. Slightly thicker materials, such as pamphlets, are placed on a rigid transparent platform having a protective light-blocking cover sheet and are driven between the drive rollers and a set of narrow idler rollers which are located adjacent to both ends of the first idler rollers and which contact the edges of the platform. For books and other still thicker originals the top panel of the machine, to which the first idler rollers are attached, is removed so that those rollers do not interfere with the transporting of the book; the book is placed on the rigid carrier as before, with the narrow edge rollers cooperating as before to transport the carrier.

3,695,755

PHOTOELECTROPHORETIC CAMERA

Raymond K. Egnaczak, Williamson, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Oct. 28, 1970, Ser. No. 84,715
Int. Cl. G03g *15/00*
U.S. Cl. 355—3 **8 Claims**



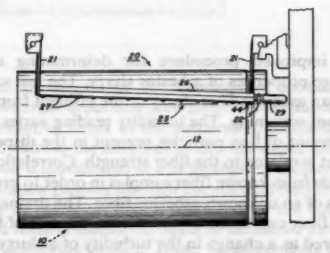
A camera employing the photoelectrophoretic process has a roller mounted to travel over a transparent flat plate. A disposable film sheet containing an ink pod is stretched over the flat plate and a disposable processor sheet is anchored at one end and coupled to the roller at the other. Photoelectrophoretic ink in the film sheet ink pod is spread over the film sheet when the roller is moved across the film sheet. The ink between the processor and film sheets is exposed to light and electric field as the roller travels over the flat plate thereby forming images on the film sheet and the processor sheet. The processor sheet is wound onto the roller during the travel of the roller over the flat plate.

3,695,756

SHEET STRIPPING APPARATUS

Richard E. Smith, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Oct. 29, 1970, Ser. No. 85,052
Int. Cl. G03g *15/00*
U.S. Cl. 355—3 **3 Claims**



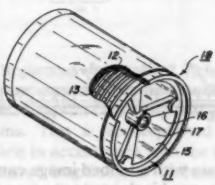
Apparatus for separating a copy sheet, supporting a toner image, from a rotating xerographic drum structure wherein the bond between the sheet and the drum is principally electrostatic. The apparatus includes a manifold having a linear array of spaced discharge orifices or nozzles supported in a spaced relationship relative to the surface of the xerographic drum structure. An elongated depression or recess provided in the circumference of the drum structure is disposed opposite one of the nozzles, to thereby provide means for the air discharged from the nozzle to be introduced between the xerographic drum structure and the copy sheet overlying the depression or recess.

3,695,757

XEROGRAPHIC PLATE

Paul M. Gregory, Cheltenham, England, assignor to Xerox Corporation, Rochester, N.Y.

Filed Feb. 13, 1970, Ser. No. 11,160
Int. Cl. G03g *15/00*
U.S. Cl. 355—3 **3 Claims**



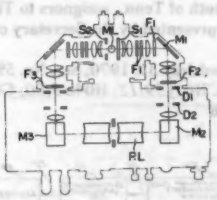
A xerographic plate including a mandrel and a photoconductive sleeve mounted thereon. The mandrel has an inflatable tube mounted in a groove for securing the sleeve to the mandrel.

3,695,758

ILLUMINATION DEVICE FOR PROJECTOR TYPE IC PRINTER

Hiroshi Tanaka, Tokyo, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed June 22, 1970, Ser. No. 48,010
Claims priority, application Japan, June 30, 1969, 44/61038
Int. Cl. G03b *27/76*
U.S. Cl. 355—71 **4 Claims**



An improved IC printer which projects the pattern of an integrated circuit from a mask to form an image on a wafer includes a pair of similar illuminating optical systems arranged symmetrically with respect to a single light source and which are thermally isolated therefrom. One of the illuminating optical systems is used for illuminating the wafer when aligning the mask and wafer, the other is used for illuminating the mask when projecting the pattern of the mask on the wafer.

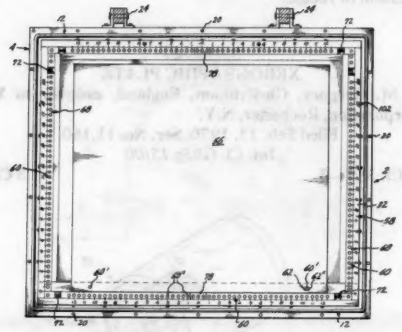
3,695,759

Patent Not Issued For This Number

3,695,760
PHOTOLITHOGRAPHICAL IMAGE PROCESSING APPARATUS

Alexander L. Orr, Seattle, Wash., assignor to Renton Engineering Company, Kent, Wash.

Division of Ser. No. 884,235, Dec. 11, 1969. This application Aug. 17, 1970, Ser. No. 64,208
Int. Cl. G03b 27/04
U.S. Cl. 355—95 9 Claims



A chase for use with a tabbed image carrier in a step and repeat photolithographical image processing operation. The chase comprises a flat-faced frame having a platen formed therein for supporting the image carrier, and an indexing system rigidly upstanding on the face thereof, along opposite edges of the platen, comprising series of spaced attachment elements individually aligned with one another on spaced parallel courses from one edge of the platen to the other, and substantially coextensive with the platen at each edge.

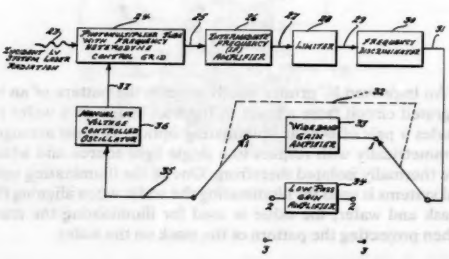
ERRATUM

For Class 356—208 see:
Patent No. 3,694,936

3,695,761
PHOTOMULTIPLIER FOR A LASER VELOCIMETER

Frank L. Crosswy, Tullahoma, and Henry T. Kalb, Manchester, both of Tenn., assignors to The United States of America as represented by the Secretary of the United States Air Force

Filed July 31, 1970, Ser. No. 59,964
Int. Cl. H01j 39/12; H04b 9/00; G01p 3/36
U.S. Cl. 356—28 2 Claims

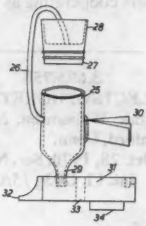

INCIDENT LV. JETTON LASER RADIATION
PHOTOMULTIPLIER TUBE WITH FREQUENCY RESPONSIVE CONTROL GRID
ENVIRONMENTAL FREQUENCY (EF) AMPLIFIER
LIMITER
FREQUENCY DISCRIMINATOR
MANUAL OR VOLTAGE CONTROLLED OSCILLATOR
WIDE BAND GAIN AMPLIFIER
LOW PASS GAIN AMPLIFIER

A photomultiplier (PM) tube for a laser velocimeter in which electrodes are utilized in conjunction with a local oscillator signal to permit frequency heterodyning to extend the useful frequency response range of the photomultiplier tube. The heterodyne PM tube is then used as a component in a superheterodyne type signal conditioning instrument for a doppler shift laser velocimeter (LV).

3,695,762
DEVICE FOR DISPENSING PARTICULATE MATERIAL UPON A MOVING SURFACE

Jozef Kazimierz Tylko, and Charles Peter Heanley, both of c/o Development Company Limited, 13, Park Place, St. James, London S.W.1., England

Continuation of Ser. No. 703,140, Feb. 2, 1968, abandoned. This application April 21, 1970, Ser. No. 28,277
Int. Cl. G01n 1/00
U.S. Cl. 356—36 3 Claims

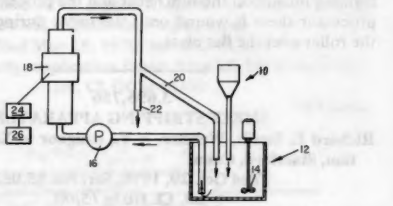


Apparatus for the examination of a stream of material which is required to be presented to a sensor responsive to electromagnetic radiations that are modified by the presence of the material, the apparatus comprising means for moving the material past the sensor whilst supported on a thin flexible strip.

3,695,763
A METHOD OF DETERMINING ONE OR MORE PROPERTIES OF ASBESTOS FIBERS TURBIDITY MEASUREMENT

Jerome Chung Hsuing Shiuh, Highland Park, N.J., assignor to Johns-Manville Corporation, New York, N.Y.

Filed Nov. 27, 1970, Ser. No. 93,002
Int. Cl. G01n 1/10
U.S. Cl. 356—36 17 Claims



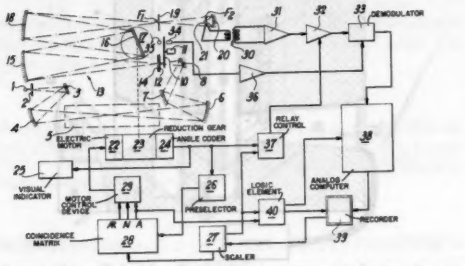
An improved procedure for determining strength and drainage properties of asbestos slurry. The test sample can be either an asbestos fiber slurry or the effluent from an asbestos fiber wet screening. The turbidity reading varies directly with the amount of fine particles present in the dispersion, which amount is related to the fiber strength. Correlation curves can be made from known fiber samples in order to predict the properties of an unknown asbestos fiber. The drainage properties of the fiber can be determined from the rate of fines removal measured as a change in the turbidity of a slurry. Correlation curves for drainage properties can also be made. The test procedure eliminates errors in filtering, drying, weighing and calculating which could arise in previously used tests.

3,695,764

AUTOMATIC SPECTROPHOTOMETRIC ABSORPTION ANALYZER

Pierre Delmas, La Soubeyranne E5, 07 Bourg St. Andeol, and Pierre Imbert, Chemin des Galettes, 84 Orange, both of France

Filed Dec. 1, 1970, Ser. No. 93,941
Claims priority, application France, Dec. 5, 1969, 6942150
Int. Cl. G01j *3/42*; G01n *21/04*; G01j *3/12*
U.S. Cl. 356—97 5 Claims



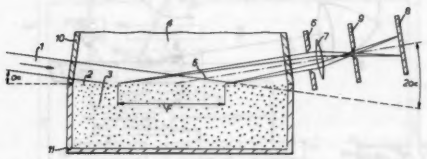
An automatic spectrophotometric absorption analyzer for continuous determination of a plurality of components of a fluid sample, comprising a monochromator with a diffraction grating receiving the light transmitted by a vessel with transparent faces which contains said sample, a photoelectric converter so arranged that the light beam emerging from the monochromator falls on its sensitive element, a unit for determining cyclically a plurality of stop positions of said diffraction grating which define wavelengths corresponding to the absorption lines of components of said sample, and means for automatic computation of the concentration of said components from the signal which is delivered by the converter.

3,695,765

METHOD FOR MEASURING AND/OR MONITORING THE SIZE OF PARTICLES IN SUSPENSION

Jan Paul Bol, Kelkheim; Joseph Gebhart, Frankfurt, Main, and Gunther Seger, Kelkheim, all of Germany, assignors to Laporte Industries Limited, London, England

Filed April 22, 1970, Ser. No. 30,783
Claims priority, application Germany, April 25, 1969, P 19 21 149.5
Int. Cl. G01n *15/02*
U.S. Cl. 356—102 7 Claims



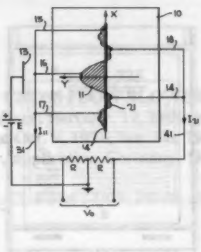
A method for measuring the diameter of particles in a suspension wherein a particle-free layer having substantially the same refractive index as the suspending medium is provided directly above the suspension and the upper surface of the suspension is illuminated at a large angle of incidence by a beam of radiation passing through the particle-free layer and the intensity of radiation that is scattered by the suspended particles and then re-enters the layer is measured for one or more small scattering angles. These measurements of scattered radiation provide a measure of the mean particle diameter of the suspended particles that is substantially independent of the concentration of particles in the suspension.

3,695,766

PHOTOSENSITIVE SURFACE SHAPING FOR OPTICAL HETERODYNING

Dominick Giglio, Hyattsville, Md., and Glen Wade, Santa Barbara, Calif., assignors to The United States of America as represented by the Secretary of the Army

Filed Jan. 14, 1970, Ser. No. 2,699
Int. Cl. G01b *9/02*; H01j *39/12*
U.S. Cl. 356—141 7 Claims



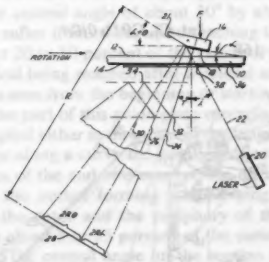
A method and apparatus for optical heterodyning with photosensitive surfaces in which the amplitude of the output current is any desired function of the angle of incidence of the incident light beams. This is accomplished by shaping a photosensitive surface in accordance with the inverse Fourier transform of the desired amplitude of current response. The photosensitive surface is divided into two sections, each section containing one or more photosensitive regions. The sum of all currents produced in the first section is substracted from the sum of all currents produced in the second section and the difference current is applied to a resistor to produce the desired output voltage.

3,695,767

APPARATUS FOR MEASURING MAGNETIC HEAD ANGLE OF A MAGNETIC DISC FILE

David J. George, Westlake Village, and Wilfred D. Iwan, Sierra Madre, both of Calif., assignors to Burroughs Corporation, Detroit, Mich.

Filed Nov. 18, 1970, Ser. No. 90,702
Int. Cl. G01b *11/26*; G11b *5/00*
U.S. Cl. 356—154 5 Claims



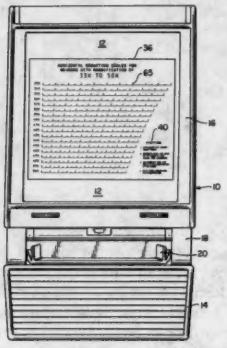
There is described apparatus for measuring the flying angle of a pneumatically supported magnetic head relative to a recording disc in which a laser beam is directed toward a transparent rotating disc. The beam is split by the rotating disc into a reflected beam and an incident beam which falls on an adjacent surface of the recording head associated with the disc. A second reflected beam is formed by the recording head. By measuring the distance between the two reflected beams on a screen, the angle between the disc and the magnetic head can be determined.

3,695,768

METHOD AND APPARATUS FOR DETERMINING MAGNIFICATION RATIO OF MICROFORM READER

Thomas A. Kyle, 2317 Barnett Drive, Bellbrook, Ohio, and Charles T. Croy, 5585 Winshire Terrace, Dayton, Ohio

Filed June 11, 1971, Ser. No. 152,203
Int. Cl. G01b 9/08
U.S. Cl. 356—165 9 Claims



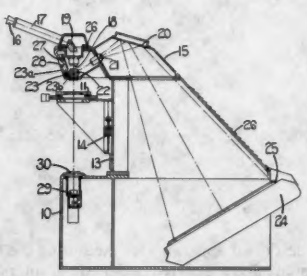
A microform reader chart having a plurality of microimages thereon is used to determine the magnification ratio of a reader and for displaying various size character samples. The character font and spacing is duplicated in a plurality of frames of data, each frame being recorded at a different reduction ratio. The placing of the chart in a reader enables the user to determine in precise manner the magnification of the reader and to observe display of different print sizes and spacing thereof.

3,695,769

OPTICAL COMPARATORS

Peter Alan Mason, Kenilworth, Warwickshire, England, assignor to Wickman Machine Tool Sales Limited, Coventry, Warwickshire, England

Filed Jan. 12, 1971, Ser. No. 105,844
Claims priority, application Great Britain, Jan. 30, 1970, 4,537/70
Int. Cl. G01b 0/04
U.S. Cl. 356—168 7 Claims



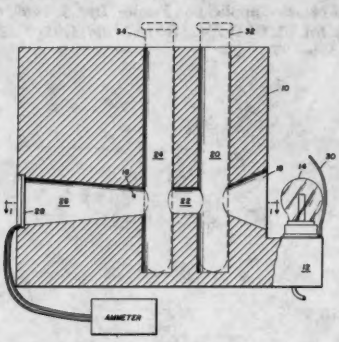
An optical comparator having workpiece support and a platform on which an enlarged layout of a profile can be laid and optical elements for reducing the image and causing it to coincide with an image of the workpiece itself, both the images being visible at the same scale through a microscope of the machine.

3,695,770

METHOD AND APPARATUS FOR DEMONSTRATING PHOTOMETRIC PROCEDURES

Charles R. Granger, 742 Hawkeye Drive, Iowa City, Iowa

Filed July 13, 1970, Ser. No. 54,423
Int. Cl. G01j 3/50; G01n 21/24
U.S. Cl. 356—180 3 Claims



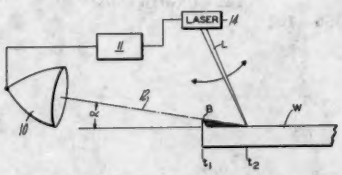
A method and apparatus for demonstrating photometric procedures and conducting colorimetric analysis. The apparatus provides a confined light path from a light source, and a test tube containing a known colored solution and a second tube containing the pure solvent to be used for an unknown concentration of the solute are placed in the light path. Transmission of the light through the tubes is measured, and then an unknown concentration of the solute is added to the second tube and the light transmission again measured and compared with the first measurement. The difference in light transmission can then be used by well known physical laws to determine the unknown concentration.

3,695,771

METHOD AND APPARATUS FOR INSPECTING SURFACES

Andras M. Bardos, 28 Stafford Avenue, Bristol, Conn.

Filed Aug. 6, 1970, Ser. No. 61,580
Int. Cl. G01n 21/32
U.S. Cl. 356—210 10 Claims

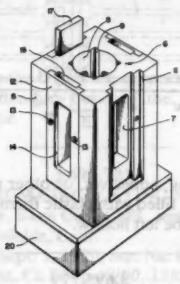


Method and apparatus for inspecting the surface of a workpiece for the presence of burrs. A focused laser beam is swept across the surface of the workpiece while a photodetector positioned at an acute angle to the workpiece surface senses reflections produced by the beam. The photodetector, when positioned in the plane swept by the beam, observes reflections from the tip of the burr and from the portion of the path on the surface which is not obscured by the burr. The length of the path portion from which reflections are obscured by the burr is directly proportional to the height of the burr. Suitable logic and measuring networks calibrated to the sweep velocity on the workpiece and triggered by the reflections are capable of determining the length of the obscured portion and therefore the height of the burr.

3,695,772
SAMPLE CELL HOLDER FOR RADIANT ENERGY ANALYZERS

Constantine G. Spyropoulos, Westwood, Calif., assignor to Beckman Instruments Inc.

Filed Nov. 16, 1970, Ser. No. 89,901
Int. Cl. G01n 1/10
U.S. Cl. 356—246 8 Claims



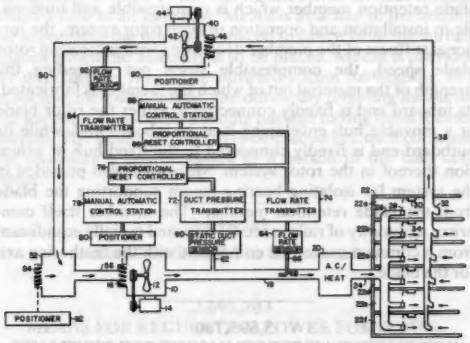
A sample cell holder for radiant energy analyzers is provided having four apertures as mutual right angles therein. A longitudinal cell receiving opening is provided which is defined by arced wall portions along the apertures and right-angle corner portions located said way between the apertures to support both circular and square sample cells therein. Removable aperture plates are provided over each aperture and form a channel between the aperture plate and the main cell body for receiving beam modifying means over each aperture. The cell is also provided with conduits for thermostatting fluid.

3,695,773
Patent Not Issued For This Number

3,695,774
BLOWER SYSTEM AND CONTROL SYSTEM THEREFOR

Lyle F. Martz, 506 Foltz Drive, Verona, Pa., and John W. Nanz, 3129 Ashlyn St., Pittsburgh, Pa.

Filed June 1, 1971, Ser. No. 148,581
Int. Cl. F01b 25/00
U.S. Cl. 415—17 16 Claims

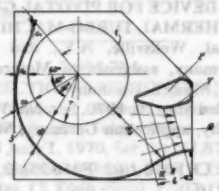


An automatic control system for high pressure blower applications prevents surging under variable supply flow rate requirements and achieves maximum efficiency of operation. The supply flow rate establishes the set point of a proportional plus reset controller, the latter receiving a feedback signal corresponding to the static discharge pressure of the supply blower and responding thereto for controlling the output of the supply blower. A return blower is controlled either through a characterizer relay in proportion to the control of the supply blower to maintain a fixed precalibrated relationship between supply and return flow rates or by a further proportional plus reset controller responsive to the supply flow rate, for establishing the set point thereof, and to the return flow rate, as a feedback signal thereto, for controlling the output of the return blower.

3,695,775
CROSS FLOW BLOWER

Dr.-Ing. Kurt Zenkner, Hertzstr. 12, Ettlingen, Germany

Filed Oct. 9, 1970, Ser. No. 79,453
Claims priority, application Germany, Oct. 10, 1969, P 19 51 115.0
Int. Cl. F04d 17/08, 29/40, 29/66
U.S. Cl. 415—53 12 Claims



A cross flow blower has a plate guide which extends along a spiral curve the distances from which to the periphery of the rotor increase gradually from the beginning of the spiral at the point of the smallest distance between the guide sheet and the periphery of the rotor up to a maximum, this distance to the periphery of the rotor corresponding at the beginning of the spiral approximately to 10 – 30 percent of the radius of the rotor, then increasing after a central angle of about 60° by a further 5 to 30 percent of the radius of the rotor, then again increasing after a central angle of about 30° by about 10 – 30 percent of the radius of the rotor, and increasing thereafter after a further central angle of about 30° by about 20 to 35 percent, whereafter it increases up to reaching the end of the spiral by about 20 to 50 percent of the radius of the rotor, the end of the spiral being reached after a central angle of about 140 to 190° as seen from the beginning or starting point of the guide sheet, the part of this guide plate extending beyond the said – of the spiral either in direction of the tangent to the end of the spiral or along a curve the point of inflection of which lies in the area of the end of the spiral, the distance between the point of the vortex forming tongue lying next to the periphery of the rotor and the periphery of the rotor corresponding to about 5 to 15 percent of the outer diameter of the rotor, and the central angle on the suction side between the beginning or starting point of the spiral and the point of the vortex forming tongue closest to the periphery of the rotor being between 130° – 180°.

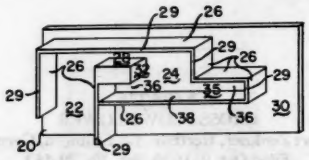
The leg of the vortex forming tongue on the suction side has a finely porous wall permeable to air so that through it finely distributed and energy containing air arrives on the suction side of the blower which air comes from the pressure side of the blower through openings in the pressure side leg, which also consists of a finely porous wall permeable to air, thereby preventing the generation of a boundary layer within the incoming flow. Between the wall on the suction side and the wall on the pressure side there is arranged a filtering substance pervious for air and producing pressure losses.

3,695,776

SELF-PRIMING CENTRIFUGAL PUMP

Clinton Rule, Leather Lane, Mass., assignor to Rule Industries, Inc., Gloucester, Mass.

Filed Oct. 16, 1970, Ser. No. 81,226
Int. Cl. F04d *1/00, 9/00*
U.S. Cl. 415—206 4 Claims



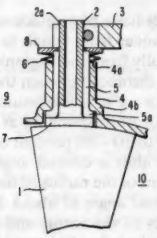
A centrifugal pump is described wherein the pumping face of the impeller is disposed vertically and wherein integral self-priming means are provided.

3,695,777

SUPPORTING DEVICE FOR PIVOTAL GUIDE BLADES IN THERMAL TURBO-MACHINES

Bernd Westphal, Wellsville, N.Y., and George Kandler, Munich, Germany, assignors to Motoren-Und Turbinen-Union GmbH, Munich, Germany

Filed May 20, 1970, Ser. No. 39,088
Claims priority, application Germany, May 23, 1969, P 19 26 338.8
Int. Cl. F01d *1/02*; F01b *25/02, 17/12*
U.S. Cl. 415—216 29 Claims



A device for supporting and sealing pivotal guide blades of turbo-machines, particularly of small gas turbines, in which the blade shaft serving as adjusting shaft for the guide blade is supported in a bearing bush which is fitted within the bearing support of a housing; the blade shaft, the bearing bush and the bearing support are thereby so dimensioned and selected from such materials as regards their coefficients of expansion that the necessary clearance for proper operation will exist at every operating temperature in at least one of the resulting fits.

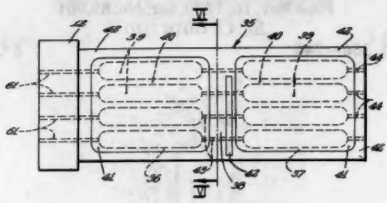
3,695,778

TURBINE BLADE

John E. M. Taylor, Pepper Pike, Ohio, assignor to TRW Inc., Cleveland, Ohio

Division of Ser. No. 764,207, Oct. 1, 1968, abandoned. This application Sept. 18, 1970, Ser. No. 73,658
Int. Cl. F01d *5/18*
U.S. Cl. 416—92 12 Claims

A lightweight turbine blade having a metallic center body and root section with hollowed areas through the center body. The center body is covered by a composite skin interfitted with the center body adjacent the edges of the blade to provide a smooth surface. The edges of the blade are formed by portions of the center body. The skin is attached to the body



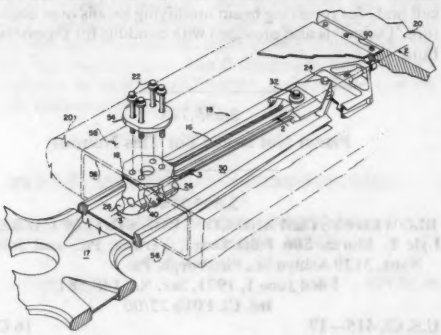
by diffusion bonding, adhesives, or other means and the hollowed areas may be filled with plastic foam or other low density material, or may be left hollow.

3,695,779

ROTOR SYSTEM INCLUDING A BLADE RETENTION MEMBER

Howard Kastan, Northridge, and Joe C. Pena, La Canada, both of Calif., assignors to Lockheed Aircraft Corporation, Burbank, Calif.

Filed May 18, 1970, Ser. No. 38,396
Int. Cl. B64c *27/38*
U.S. Cl. 416—135 13 Claims



In a helicopter rotor system, a hub assembly including a blade retention member which is compressible and torsionable in installation and operation of such rotor system, the torsional stiffness of the member decreasing with increasing rotor blade speed, the compressible stress not exceeding the strength of the material out of which the member is fabricated. Its inboard end is fixedly connected to either the rotor blade or a movable hub enveloping it at its inboard end, while its outboard end is fixedly connected to the fixed hub or extension thereof in the rotor system. Means are also provided in the system for isolating bearing means supporting the blade from the blade retention member. The member itself comprises a plurality of rails spacedly disposed radially equidistant from a common centerline coincident with the feathering axis for the blade.

3,695,780

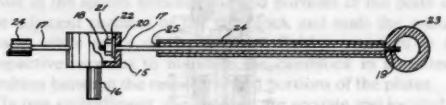
WHEEL-TYPE AIRSCREW HAVING PRE-TENSIONED BLADE SUPPORTS

Henry R. Velkoff, 6715 Beren St., Worthington, Ohio

Filed Oct. 19, 1970, Ser. No. 82,016
Int. Cl. B64c *27/20*
U.S. Cl. 416—189 10 Claims

A wheel-shaped rotor for a helicopter or similar aircraft characterized by an inner hub, a plurality of airfoil blades ex-

tending outwardly from the hub portion, an outer rim or ring connected with and joining the outer end portions of the



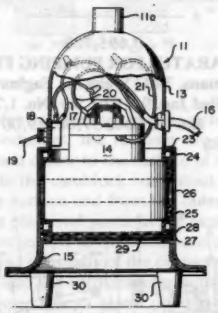
blades, and wherein the blades are supported by pre-tensioned spoke members extending between the hub and outer rim members of the rotor.

3,695,781

GAS MEDIUM CIRCULATING ASSEMBLY

Joseph A. LaBarber, Kern City, Calif., assignor to Henry Weiland, Hacienda Heights, Calif.

Filed Sept. 1, 1970, Ser. No. 68,742
Int. Cl. F04b *49/00, 35/04*
U.S. Cl. 417—12 **7 Claims**



The assembly includes a motor for producing a flow of gas medium that is freely disposed in a housing. Retaining means is used to hold the freely disposed motor in place within the housing. In a specific embodiment of the assembly, the motor is freely disposed against an abutment means. The retaining means includes a rim means or section detachably connected to the bottom of the housing to provide support for the motor. An opening located in the rim means forms an inlet through which a flow of air may pass. Means is attached to the housing for supporting the housing a spaced distance from the surface against which the assembly is to be placed. Means is provided for directing the flow of air outwardly from the housing. In a more specific embodiment, the outwardly directing means for the gas medium includes a tubing passage having holes located therein. The tubing passage may be placed in a bath container for providing a hydromassage to a person in the bath container.

3,695,782

Patent Not Issued For This Number

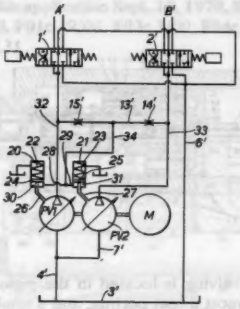
3,695,783

MEANS FOR REGULATING POWER FOR PUMPS

Ingebret Soyland, and Kristian Soyland, both of 4340 Bryne, Norway

Filed Nov. 3, 1970, Ser. No. 86,412
Claims priority, application Norway, Dec. 3, 1969, 4777
Int. Cl. F04b *49/00*
U.S. Cl. 417—216 **3 Claims**

Means for additive power regulation for at least two pumps comprising a control conduit which is connected to the main pump conduits and is provided with throttle means so adjusted to the volume-flows of the pumps that a pressure set up in the control conduit will be proportional to the sum of the effects



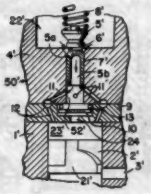
of the pumps, said pressure actuating regulating means for connecting the main flow from one of the pumps to the main flow to the other pump.

3,695,784

FUEL INJECTION PUMP CONSTRUCTION

Mataji Tateishi, Nagasaki, Japan, assignor to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed June 1, 1970, Ser. No. 41,874
Claims priority, application Japan, June 9, 1969, 44/44670
Int. Cl. F04b *49/00, 21/02*
U.S. Cl. 417—296 **4 Claims**



A fuel injection pump includes a fuel pump plunger which is movable to direct the fuel under pressure through a passage which is regulated by a delivery valve. The delivery valve includes a collar portion which, upon the return movement of the delivery valve, causes a sucking back or unloading action on the fuel in a direction toward the pump plunger chamber. The invention provides means for varying the fuel flow area in the return direction of movement of the delivery valve in accordance with the lift of the delivery valve during its operative opening movement. In one arrangement the delivery valve is constructed to close one or more escape ports during its downward return movement for slowing the return flow of the fuel to the plunger chamber and in another embodiment the delivery valve includes an end portion which provides a variable throttling action on a port communicating with the delivery valve passage and the pump plunger chamber.

3,695,785

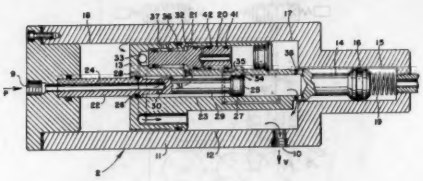
RECIPROCATING PUMP

Robert Dale Vanderlaan, 724 Fineview Avenue, Kalamazoo, Mich.

Filed Nov. 23, 1970, Ser. No. 91,653
Int. Cl. F04b *17/00, 35/00;* **F01b** *7/18*
U.S. Cl. 417—400 **16 Claims**

Reciprocating pump includes a piston contained in a cylinder which is continuously vented at one end, and the

other end is alternately subjected to pressure and vented through a simplified valve and porting arrangement. During the pressure phase, the piston is moved in the direction of the continuously vented end, whereas return movement of the piston is caused by an external applied force upon venting the



pressure. The valving is located in the piston for maximum simplicity and most direct porting, and a small diameter fixed porting tube may be used to supply pressure to the valving in the piston through porting. The valving and porting relationships between elements assure against pump stalling.

3,695,786

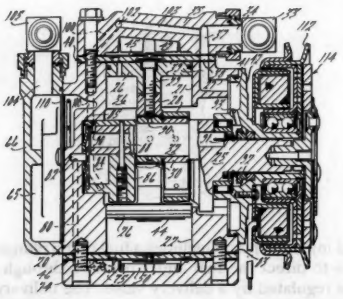
COMPRESSOR AND METHOD OF LUBRICATION

Edwin L. Gannaway, Sidney, Ohio, assignor to Copeland Refrigeration Corporation

Filed Jan. 27, 1970, Ser. No. 6,158

Int. Cl. F16n *13/00*

U.S. Cl. 417—437 **7 Claims**



A Scotch yoke refrigeration compressor of the four cylinder X-type has a rear discharge chamber containing a high pressure oil sump from which oil is led through a capillary tube to a cavity in the body containing a low pressure oil sump from which the oil is led to the parts to be lubricated. The pressure of oil in the low pressure sump is materially reduced but somewhat higher than the pressure in the areas of the lubricated parts. A high point of the low pressure sump is vented to a compressor inlet passage area having a pressure slightly below that in the low pressure sump and slightly above that in the areas of the lubricated parts.

3,695,787

THROUGH RUNNING AND PRESSURE PUMP

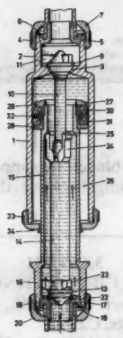
Johann Kraus, Innsbruck, Austria

Filed June 4, 1970, Ser. No. 43,354

Int. Cl. F04b *39/10*

U.S. Cl. 417—547 **3 Claims**

The specification describes a reciprocating piston pump for manual or power driven operation. It comprises a piston, a cylinder for the piston, a piston tube carrying the piston and valves adjacent to an outer end of the piston tube ad to the other end of the pump for regulating flow through the pump.



The valves are provided with means for operating them by mechanical friction on relative movement taking place between the piston tube and the cylinder.

3,695,788

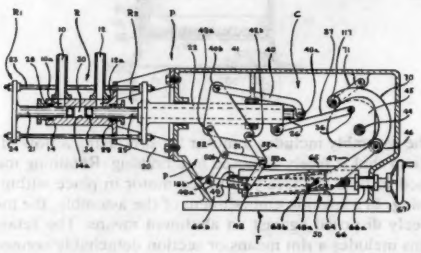
APPARATUS FOR PUMPING FLUIDS

Bernard A. Loomans, 3403 Weiss St., Saginaw, Mich.

Filed Jan. 9, 1970, Ser. No. 1,707

Int. Cl. F04b *37/00*, *19/00*

U.S. Cl. 417—488 **11 Claims**



This disclosure relates to a fluid pump for pumping fluids with opposed reciprocating pistons which periodically displace fluid between inlet and outlet ports. The pistons, which are mounted in a passage communicating with the ports, may be moved apart to provide an opening for accepting fluid from the inlet port. The pistons are next moved to a location adjacent the outlet port while the volume of the opening remains constant. The pistons are then moved together to close the opening and force the fluid through the outlet port. The volume of fluid displaced may be selectively varied.

3,695,789

BALANCING MECHANISM FOR FLUID TRANSLATING DEVICE

Birger F. Jansson, Racine, Wis., assignor to J. I. Case Company

Filed April 13, 1970, Ser. No. 27,733

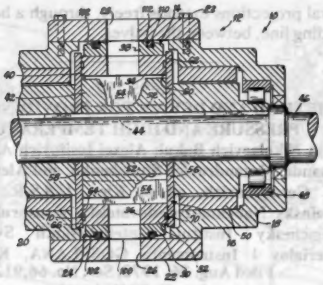
Int. Cl. F01c *21/00*; F03c *3/00*; F04c *27/00*

U.S. Cl. 418—75 **14 Claims**

A fluid translating device having a rotor rotatably mounted within a bore in a camblock that is supported within a housing. The rotor is spaced from the bore to define an annular space and has plates extending from opposite ends thereof with the end portions of the side plates being in overlapping spaced

relationship with the opposed surfaces of the camblock. The opposed surfaces of the camblock have a plurality of circumferentially spaced recesses formed therein with each of the recesses communicating with the annular space through a slot. Thus, fluid being translated between inlet and outlet ports flows in the spaces between the end portions of the plate and the adjacent surfaces of the camblock and seals the annular space, while some of the pressure fluid is received in the respective recesses to maintain the camblock in a centered position between the respective end portions of the plates.

In one embodiment, the recesses are arcuate and located on



a common diameter greater than the diameter of the bore. In an alternate embodiment, the recesses are arcuate and one end of each recess is closer to the surface of the bore than the opposite end while the camblock has cutout portions extending from the bore surface and from the outer surface, so that all portions of the plate end portions are exposed to the fluid. In a further embodiment, the recesses are substantially longitudinal and extend chordally of the center of the bore.

The camblock also has surfaces adjacent the housing opening which are beveled from a center point to produce substantial line contact between the housing opening and the camblock.

3,695,790

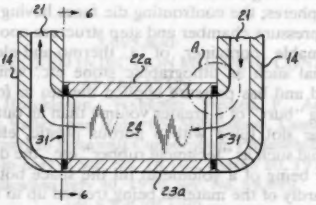
HOUSING SEALING MEANS FOR ROTARY ENGINES

Charles Jones, 208 Forest Drive, Hillsdale, N.J.

Filed May 24, 1971, Ser. No. 146,051

Int. Cl. F01c *21/06, 19/00*

U.S. Cl. 418—83 **5 Claims**



A means of sealing two abutting portions of an engine housing at a location where the available space for sealing means is restricted, by providing a generally annular thin plate having perforations for coolant flow and having an elastomeric gasket applied to each of the inner and outer peripheral edges of the plate, which is positioned in a congruent recess in one of the two abutting housing portions.

3,695,791

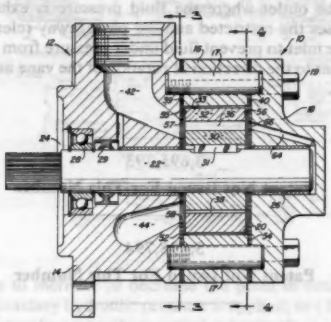
VARIABLE SEALED HYDRAULIC PUMP OR MOTOR

Robert Wesley Brundage, St. Louis, Mo., assignor to Emerson Electric Co., St. Louis, Mo.

Continuation-in-part of Ser. No. 883,769, Dec. 10, 1969, abandoned. This application Sept. 18, 1970, Ser. No. 73,307

Int. Cl. F01c *19/08*; F03c *3/00*; F04c *27/00*

U.S. Cl. 418—131 **14 Claims**



An internal gear pump employs plates at opposite ends of the gears with the plates normally slightly spaced from the axial ends of the gears but deformable into sealing relationship with the gears in response to pressure and/or temperature. The outer periphery of the plates is fixed to the housing and, in the preferred embodiment, the plates are bi-metallic so that as they heat they move to close the space. High pressure is communicated to the side of the plates remote from the gears so as to pressure bias the plates toward the gears. The plates provide an automatic adjustment of the running clearances as the temperature and/or pressures of the device change.

3,695,792

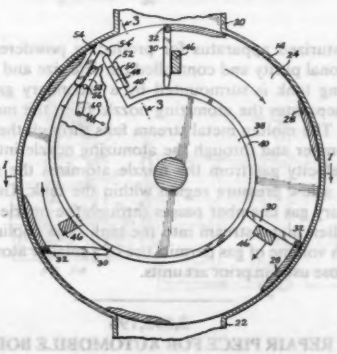
FLUID PRESSURE ENGINE

Iver H. Iverson, Box 41, 3909 East Fourth Plain Blvd., Vancouver, Wash.

Filed Oct. 22, 1970, Ser. No. 83,091

Int. Cl. F01c *1/00*; F03c *3/00*; F04c *1/00*

U.S. Cl. 418—176 **2 Claims**



A stationary, hollow, cylindrical housing having a fluid inlet and a fluid outlet confines within it a rotary vane support which mounts a plurality of circumferentially spaced vanes pivoted thereto adjacent the periphery of the housing on axes parallel to the rotational axis of the vane support. Also within the housing is a fixed core member arranged to provide an an-

nular passageway between it and the housing, the radial dimension of which passageway is substantially uniform from the inlet to the outlet and decreases progressively from the outlet to the inlet in the direction of rotation of the vane assembly. The vanes extend across and substantially close this annular passageway and pivot to allow them to accommodate to the change in radial dimension of the passageway. Fluid under pressure enters the annular passageway through the inlet and applies pressure against each vane as it rotates toward the outlet where the fluid pressure is exhausted. A valve closes the restricted annular passageway releasably adjacent the inlet to prevent fluid under pressure from the reacting counter to the direction of rotation of the vane assembly.

3,695,793

Patent Not Issued For This Number

3,695,794

Patent Not Issued For This Number

3,695,795

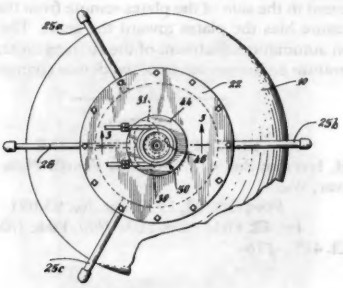
PRODUCTION OF POWDERED METAL

James L. Jossick, Newtown, Conn., assignor to Conn. Engineering Assoc. Corp., Newtown, Conn.

Filed March 20, 1970, Ser. No. 21,439

Int. Cl. C21c 7/00

U.S. Cl. 425—7 **10 Claims**



Miniaturized apparatus for producing powdered metal of exceptional purity and controlled particle size and shape. The atomizing tank is surmounted by a secondary gas chamber which separates the atomizing nozzle from the molten metal source. The molten metal stream falls through the secondary gas chamber and through the atomizing nozzle into the tank. High velocity gas from the nozzle atomizes the stream and creates a low pressure region within the tank. Gas from the secondary gas chamber passes through the nozzle along with the molten metal stream into the tank. The cooling effect of the high volume of gas permits use of a smaller atomizing tank than those used in prior art units.

3,695,796

REPAIR PIECE FOR AUTOMOBILE BODIES

Willy Schneider, 74 rue de Kinkempois, a Liege, Belgium

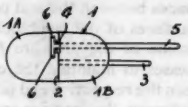
Filed June 1, 1970, Ser. No. 42,016

Claims priority, application Belgium, May 30, 1969, 733,917

Int. Cl. B29h 5/04

U.S. Cl. 425—12 **2 Claims**

A repair piece for automobile bodies comprising a substantially thin plate of foldable material. The plate is folded upon itself along a folding line. A pivot tab is secured to one half of the plate. A rod for unfolding the other half and having a pair



of lateral projections extends freely, through a hole located at the folding line, between the halves.

3,695,797

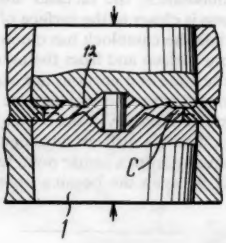
METHOD AND DEVICE FOR PROVIDING HIGH PRESSURE AND HIGH TEMPERATURE

Valentin Nikolaevich Bakul; Alexei Iosifovich Alexei Prikhna; Alexandr Alexandrovich Shulzhenko, and Alexei Vladimirovich Gerasimovich, all of Kiev, U.S.S.R., assignors to Ukrainsky Nauchno-Issledovatelsky Konsbruktorsko-Tekhnologichesky Institut Sinteticheskikh Sverkhtverdykh Materialov i Instrumenta GOSPLANA, Kiev, U.S.S.R.

Filed Aug. 26, 1970, Ser. No. 66,912

Int. Cl. B30b 11/32

U.S. Cl. 425—77 **6 Claims**



A die pair for use in high temperature high pressure apparatus for use in the synthesis of super hard materials such as diamonds, cubic boron nitride or the like in which the dies include an annular step structure on confronting cooperating faces of the dies to afford over an extended period of time stable, repetitive temperatures in the order of thousands of degrees centigrade and pressures in the order of 60 thousand atmospheres; the confronting die faces having recesses forming a pressure chamber and step structure cooperating with a deformable container of a thermo-and-electro-insulating material such as lithographic stone etc. which deforms as heated and has pressure applied thereto to form an annular sealing "burr" of a greater volume than an outer surrounding annular slot filled with a porous plastic, electro-insulating material such as "technical rubber" etc.; the deformable container being of a volume to fill the space both inwardly and outwardly of the material being treated up to the confronting edge of annular surrounding steps; the outer steps having radial, transverse slots; staggered in confronting relation; for readily accommodating the porous plastic outer seal.

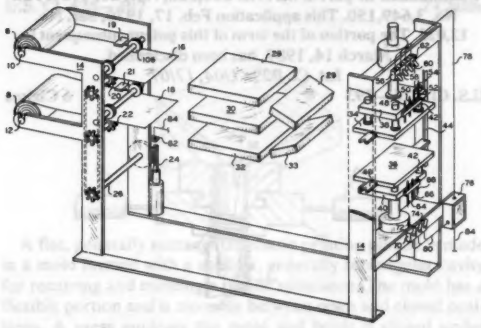
3,695,798

Patent Not Issued For This Number

3,695,799
APPARATUS FOR VACUUM FORMING HOLLOW ARTICLES FROM TWO SHEETS OF THERMOPLASTIC MATERIAL

Edward C. Held, Jr., Bartlesville, Okla., assignor to Phillips Petroleum Company

Division of Ser. No. 622,615, March 13, 1967, Pat. No. 3,548,043. This application July 23, 1970, Ser. No. 57,490
Int. Cl. B29c *17/03*
U.S. Cl. 425—109 **7 Claims**



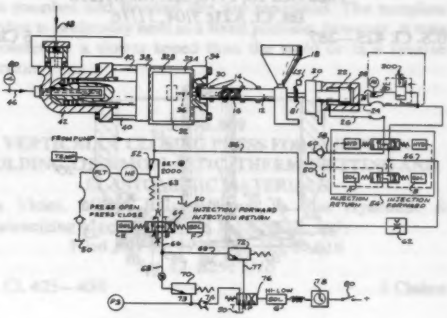
Hollow articles are fabricated from two flat sheets by passing said sheets through a heating zone while in a spaced relationship, and thence advancing said sheets forwardly and inwardly into a closer space relationship between two mold halves; said mold halves then being brought together as a vacuum is pulled on each sheet to cause it to conform to the shape of its respective mold. The molds can have means to draw the sheet up to the peripheral edges of the mold so as to minimize scrap. The resulting parts are then severed from the connecting web, such as by shearing with a dull plate. Manifolds are provided in the molds to vent each hollow article when using multicavity molds. In embodiments wherein the sheets are disposed horizontally, the positioning of said sheets relative to said heaters, molds, and the like is adjusted to compensate for the unsymmetrical nature of the heat transfer and sagging. The sheets can be fed from floating rolls to aid in alignment. The entire molding cycle is operated on a combination of time and sequence control so as to eliminate wasted time and allow greater flexibility in adjusting process conditions.

3,695,800
TIME MONITORED INJECTION MOLDING CONTROL APPARATUS

Herman R. Hutchinson, Wyncote; Vasken F. Arpajian, Huntingdon Valley, and Robert S. Malcomson, Lansdale, all of Pa., assignors to Pennwalt Corporation, Philadelphia, Pa.

Continuation-in-part of Ser. No. 18,142, March 10, 1970. This application July 30, 1970, Ser. No. 59,499
Int. Cl. B29f *1/06*
U.S. Cl. 425—146 **17 Claims**

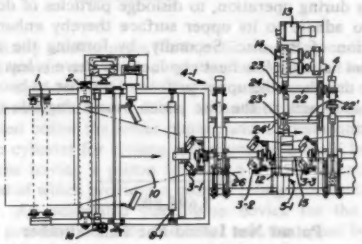
Process control for injection molding machines in which the viscosity of the plasticized material in a shot being prepared is monitored as a function of ram injection speed (rate of melt flow) at constant hydraulic pressure. The interval is measured during ram advancement between the time at which a pressure relief valve opens and the time that the mold cavities are substantially filled (when ram is at end of stroke). If the time period exceeds or falls below predetermined limits, either (1) the heat input to subsequent shots being prepared may be respectively raised or lowered in increments, (2) high pressure injection time may be respectively added or subtracted in increments to increase or decrease the point in time at which lower secondary hydraulic pressure is applied, or (3) injection pressure may be respectively raised or lowered.

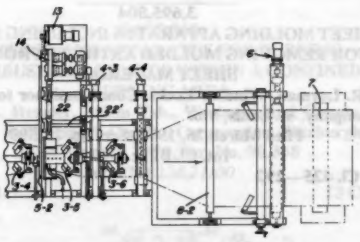


3,695,801
APPARATUS FOR CRUMPLING SHEET-LIKE MATERIALS

Hidekatsu Matsushita, Kyoto, and Kenichi Ouba, Okayama, both of Japan, assignors to Kuraray Co., Ltd., Osaka, Japan

Filed Aug. 25, 1970, Ser. No. 66,673
Claims priority, application Japan, Aug. 25, 1969, 44/67445
Int. Cl. B29c *17/02*
U.S. Cl. 425—193 **15 Claims**





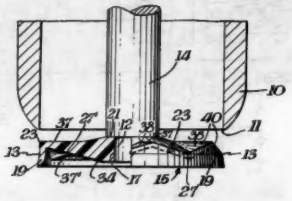
A machine for producing wrinkles in a continuously moving web of sheet material comprises one or more sets of feeding mechanisms for the sheet material cooperating with a pair of semi-circular sinuously slotted dies, one of the dies being fixed and the other being moved in an orbital circular path transverse to the plane of the fixed die but spaced from it and without altering its angular relationship thereto.

3,695,802

CUTTER AND VALVE DISC FOR RECIPROCATING DOUGHNUT AND CRULLER FORMERS

Chace D. Gilmore, 1224 Pottstown Pike, West Chester, Pa.

Filed Oct. 16, 1970, Ser. No. 81,298
Int. Cl. A21c *3/04, 11/16*
U.S. Cl. 425—287 **5 Claims**



A thin, relatively flat cylindrical disc for use with a reciprocating doughnut cutter sleeve is formed to have ridged, radially extending protuberances forming flutes on the upper surface of the disc so as to stroke the dough as it is being extruded to form the raw dough ring thereby creasing the dough formation without breaking its skin formation. This insures uniform cooking of the dough mass around the hole in the cooked dough. The fluted disc is formed of stiffly flexible material preferably having a relatively low heat conductivity. To increase the axial stiffness of the flexible disc and to enhance clean cuts of the dough, an outwardly flared, downwardly extending peripheral flange is formed at the tips of the protuberances. This aids in the positioning of the disc and in effecting a seal between the disc and the reciprocating sleeve and insures that the dough is cut off cleanly. The axial peripheral flexibility of the disc enables the disc, as it flexes slightly during operation, to dislodge particles of dough that tend to adhere to its upper surface thereby enhancing the operation of the disc. Secondly, by forming the disc of a material having a low heat conductivity there is less tendency for the dough on the upper surface of the disc to become heat dried and stuck to the disc which events degrade its proper operation.

3,695,803

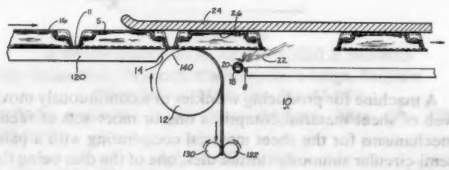
Patent Not Issued For This Number

3,695,804

SHEET MOLDING APPARATUS INCLUDING MEANS FOR REMOVING MOLDED ARTICLES FROM THE SHEET MATERIAL

Lee R. Layman, Windsor Locks, Conn., assignor to Monsanto Company, St. Louis, Mo.

Filed March 25, 1970, Ser. No. 22,599
Int. Cl. B22c *17/04*
U.S. Cl. 425—292 **3 Claims**



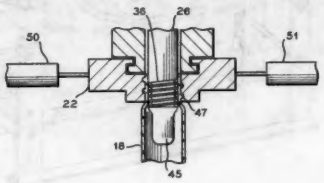
Articles formed from sheet material in a trim in place thermoforming operation are separated from the remainder of the sheet and rapidly removed from the place of separation by a method which involves angularly directing a jet of high velocity gas at the article as the sheet with the article partially separated therefrom is passing over a stripping surface. The apparatus includes a conduit immediately adjacent the stripping surface with a series of angularly oriented openings formed therein for passage of the gas therethrough.

3,695,805

FORMING PLUG FOR BLOW MOLDING ORIENTED ARTICLES

Dixie E. Gilbert, Bartlesville, Okla., assignor to Phillips Petroleum Company

Continuation-in-part of Ser. No. 880,326, Nov. 26, 1969, Pat. No. 3,649,150. This application Feb. 17, 1970, Ser. No. 12,023. The portion of the term of this patent subsequent to March 14, 1989, has been disclaimed.
Int. Cl. B29c *1/04, 17/07*
U.S. Cl. 425—393 **6 Claims**



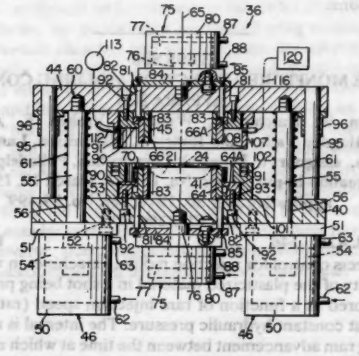
A first end portion of a tubular parison free form which has been heated to orientation temperature is expanded out into conformity with neck or thread forming jaws by inserting into one end of said parison a first end portion of a plug, closing the jaws over the first end portions of the parison and the plug, and thereafter forcing the first end portion and other portions of the plug into the parison.

3,695,806

APPARATUS FOR FORMING A PERIPHERAL BEAD IN FLANGE MEANS OF A PREFORMED CONTAINER

Horst F. W. Arfert, Richmond, Va., assignor to Reynolds Metals Company, Richmond, Va.

Continuation-in-part of Ser. No. 854,108, Aug. 29, 1969, abandoned. This application June 24, 1970, Ser. No. 49,492
Int. Cl. B29c *17/00*
U.S. Cl. 425—398 **1 Claim**



A closure having a peripheral flange portion provided with an annular bottom surface is sealed by the application of heat and pressure to a dish-like container having a peripheral

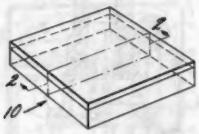
flange portion provided with a cooperating annular top surface so as to define a high quality bonded lamination comprised of the flange portions. The outer portion of the lamination is then curled to form a high strength annular bead which defines the peripheral outline of the side wall of a sealed container.

3,695,807

MOLDING A PLASTIC PRINTING PLAQUE

Robert L. Sorensen, Westport, Conn., and John Casanova, Racine, Wis., assignors to Time, Incorporated, New York, N.Y.

Filed Aug. 17, 1970, Ser. No. 64,244
Int. Cl. B29c *3/00*
U.S. Cl. 425—407 **7 Claims**



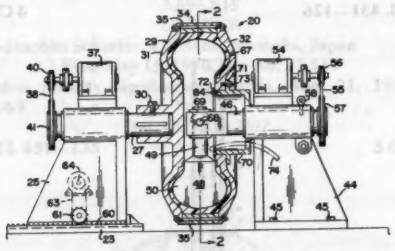
A flat, generally rectangular plastic printing plaque is made in a mold formed with a shallow, generally rectangular cavity for receiving and molding a plastic substance. The mold has a flexible portion and is movable between open and closed positions. A press encloses the mold and holds it closed under pressure to facilitate molding of the plastic substance. The relative conformation of the mold and press is such as to leave an insulating space between the flexible portion and the press. The mold is overcharged so that there is a total lateral deformation of the flexible portion which is within the range of 0.002 inches to 0.020 inches and preferably within the range of 0.006 inches to 0.010 inches.

3,695,808

APPARATUS FOR MAKING TIRES

Heinz Wilhelm Beneze, Akron, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 796,466, Feb. 4, 1969, Pat. No. 3,555,141.
This application April 27, 1970, Ser. No. 43,281
Int. Cl. B29c *5/00*; B29h *3/08*
U.S. Cl. 425—426 **10 Claims**



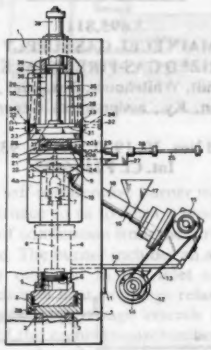
An apparatus for making tires which include a separable mold which has an inner surface which defines the outer shape of a tire to be formed. A generally flat paddle shaped template member extends generally radially within the mold when it is assembled and the cross sectional shape of the tire is determined by the space between the template and the inner surface of the mold. The mold is rotated about its axis while the template member is preferably held in a fixed position. A flowable and hardenable elastomeric material suitable for use in constructing tires (such as polyurethane) is introduced into the rotating mold and centrifugal force urges the flowable material to the inner surface of the mold and when sufficient elastomeric material has been added, the wiping action of the template member on the elastomeric material forms the inner shape of the tire. The material hardens and the mold, the template member and finished tire are separated. The template member is preferably held in a fixed position, however, it may be rotated at a slower speed than the mold or in a reverse direction.

3,695,809

VERTICALLY CLOSING PRESS FOR INJECTION MOLDING THERMOPLASTIC, THERMOSETTING AND ELASTOMERIC MATERIALS

Dino Vicini, Milan, Italy, assignor to Mas Hydraulic & Vulcanizing Machinery Co., S.R.L., Milan, Italy

Filed July 31, 1970, Ser. No. 60,010
Int. Cl. B29c *1/16*
U.S. Cl. 425—450 **4 Claims**



A vertically closing press for injection molding comprising an upper platen and a lower platen, an upwardly mounted hydraulic cylinder for producing a quick approach of the upper platen to the lower platen, a transfer chamber fast with and located below the lower platen, and a combination of a hydraulic cylinder for closing and clamping a mold between the platens having a piston forming a further cylinder the piston rod of which provides a transfer plunger in the transfer chamber. An adjustable backing-up device for the upper platen is provided between the latter and the upper beam of the frame, the device being retractable laterally to permit raising of the upper platen.

3,695,810

METHOD AND APPARATUS FOR BURNING COMBUSTIBLE LIQUIDS WITHIN A CONFINED BURNING AREA

Richard B. Heagler, Salem Tsh., Westmoreland County, Pa., assignor to Pittsburgh Corning Corporation, Pittsburgh, Pa.

Filed Nov. 17, 1970, Ser. No. 90,348
Int. Cl. F23d *21/00*
U.S. Cl. 431—2 **13 Claims**

Oil residues and emulsions floating on a body of water are burned by confining the layer of residue within a furnace

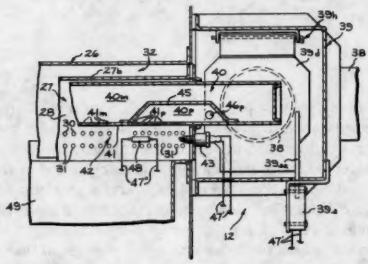
chamber. The furnace has combustion air inlet means adjacent the upper surface of the residue and a stack with inlets for a combustible gas. The combustible gas burns the combustible material in the gasses evolved from the combustion of the liquid residue to provide a relatively smokeless combustion process. The furnace is fabricated from a refractory material having insulating properties so that a substantial portion of the heat given off by the combustion of the residue is retained within the furnace to propogate further combustion of the residue and aid in the complete combustion of the difficult to burn portions of the residue. The furnace is preferably fabricated from a material that permits the furnace to float partially submerged in the body of water and may be easily transported from one location on the body of water to another location thereon. The furnace may be supported from suitable pilings and the residue conveyed directly into the furnace chamber. For certain types of difficult to burn residues, a layer of cellular glass nodules with a textured outer surface is positioned to float on the upper surface of the residue within the furnace chamber.

3,695,811

PILOT AND MAIN FUEL GAS SUPPLY MEANS FOR PRESSURIZED GAS-FIRED SPACE HEATER

Theodore C. Brandt, Whitehouse, Tex., and James L. Schulze, Sr., Middletown, Ky., assignors to General Electric Company

Filed Nov. 30, 1970, Ser. No. 93,722
Int. Cl. F23q *9/08*
U.S. Cl. 431—43 **5 Claims**



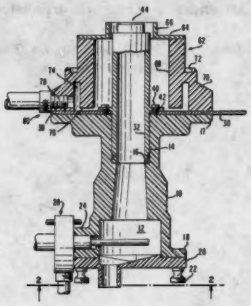
This invention provides novel means for supplying pilot and main fuel gas to the fuel gas-combustion air mixing area of a gas-fired space heater employing pressurized combustor means. The pressurized combustor means include an elongate trough having an imperforate base wall and long side walls that are pierced by a plurality of pressurized combustion air inlet apertures, and a fuel gas supply conduit which extends generally longitudinally through the trough. The fuel gas supply conduit has a long surface that is pierced by a plurality of apertures through which fuel gas can enter the trough and be turbulently mixed with pressurized combustion air in a fuel gas-air mixing area, defined by the apertured trough side walls and the apertured fuel gas supply conduit surface, and can be ignited therein to produce an extremely intense heat source flame that is discharged into the space heater heat exchanger means via hollow interconnecting conduit means. The present invention preferably provides its novel pilot and main fuel gas supply means by installing partition means which divide the hollow fuel gas supply conduit into a pilot and a main gas supply potion. And, control and igniter means are also preferably pivoted in accordance with the present invention such that fuel gas will be first supplied to the mixing area via the pilot portion and ignited before any fuel gas is supplied via the main portion.

3,695,812

BURNER CONSTRUCTION FOR FLAME SPECTROPHOTOMETER AND SYSTEM THEREFOR

Rand E. Herron, Stamford, Conn., and Jack M. Olich, Putnam Valley, N.Y., assignors to Technicon Instruments Corporation, Tarrytown, N.Y.

Filed Oct. 30, 1970, Ser. No. 85,347
Int. Cl. F23n *3/00*
U.S. Cl. 431—90 **22 Claims**



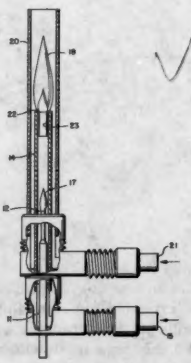
There is provided a spectral flame burner of the preatomizer type having a sample tube the outlet of which is disposed within a carrier gas conduit terminating in a nozzle. The spacing between the outlet of the sample tube and the outlet of the nozzle is adjustable during the normal operation of the analyzer system, including the burner. Improved means is provided to withdraw the outlet of the sample tube to a position in which sufficient gas pressure is developed in the sample tube to blow out any obstruction in the latter, including a lead screw mechanism operatively associated with the sample tube. The burner has an improved cap construction and a control system is provided for the burner to safely shut down the burner when a defect is detected in the burner system.

3,695,813

BURNER AND METHOD FOR DETECTION OF HALOGENS

Paul A. Griffith, La Habra, and David A. Rohrer, Whittier, both of Calif., assignors to Beckman Instruments, Inc.

Filed Nov. 27, 1970, Ser. No. 93,337
Int. Cl. F23j *7/00*
U.S. Cl. 431—126 **4 Claims**



An improved burner and method of construction is disclosed for use in detecting halogen and halogen containing compounds. A ring of indium is coated on the inner surface of

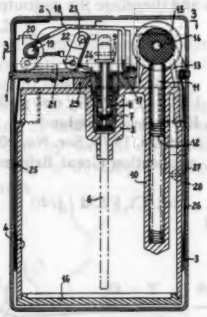
a secondary flame supporting structure. A primary flame supporting structure is located within the secondary flame supporting structure. The indium ring is coated over a palladium, gold or rhodium base coating deposited on the secondary flame supporting structure. The method of coating the indium ring is also disclosed.

3,695,814

GAS CIGARETTE LIGHTER

Jean Genoud, Saint-Cyr-Au-Mont-D'OR, France, assignor to Etablissments Genoud & Cie, Venissieux, France

Filed Jan. 8, 1971, Ser. No. 104,925
Claims priority, application France, Mar. 16, 1970, 7009358
Int. Cl. F23q 2/16
U.S. Cl. 431—131 2 Claims



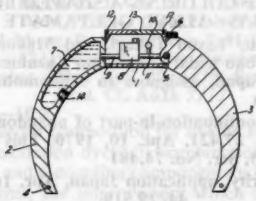
In this novel gas cigarette-lighter arrangement comprising an external case having any desired, refined or luxury appearance, to be kept permanently, and an inner, unitary structure of the so-called "los" type, i.e. adapted to be thrown away and replaced by a new one when the gas initially introduced into the reservoir thereof is exhausted, said inner structure comprises as conventional a head and a reservoir with the mechanism usually associated therewith, such as the pressure reducing device, the valve and the flint and wheel system, and is characterized by a cover pivotally mounted to said head and so arranged that its opening movement causes a forked lever to lift the valve stem and burner member by engaging from underneath the projection usually formed on said member.

3,695,815

LIGHTER

Hans-Joachim Schaefer, 426 Sane, Jokosuka, Japan

Filed May 15, 1970, Ser. No. 37,519
Claims priority, application Austria, May 21, 1969, A 4848/69
Int. Cl. F23q 2/02
U.S. Cl. 431—135 5 Claims



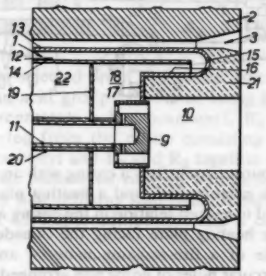
A lighter is attached to the wrist or to a finger by a pair of arms, at least one of which is spring-loaded, while the other arm contains a fuel tank. The lighter may be ignited by operation of one of the arms.

3,695,816

SELF-RECUPERATIVE BURNERS

Brian Oeppen; John Edmondson, and Stanley Sourbutts, all of Warwickshire, England, assignors to The Gas Council, London, England

Filed Oct. 30, 1970, Ser. No. 85,619
Claims priority, application Great Britain, Nov. 1, 1969, 53,674/69
Int. Cl. F23c 7/06
U.S. Cl. 431—166 5 Claims



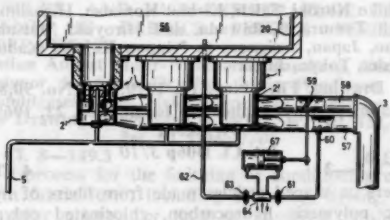
A furnace has a self-recuperative burner mounted in a port in a wall of the furnace so as to form a products passage to conduct products of combustion from the furnace chamber to outside the furnace. The burner includes an air passage which leads to a nozzle mounted in the inlet of a combustion chamber and which is in heat-exchange relationship with the products passage. The air passage extends at first forwards beyond the inlet of the combustion chamber and then rearwards to the nozzle so that the air-heating surface area is more effective and metal in the hottest part of the products passage is cooled.

3,695,817

MUFFLE BURNER

Harendra Nath Sharan, Seuzach, Switzerland, assignor to Sulzer Brothers, Ltd., Winterthur, Switzerland

Continuation-in-part of Ser. No. 880,683, Nov. 28, 1969. This application May 18, 1970, Ser. No. 38,123
Claims priority, application Switzerland, May 22, 1969, 17646/68
Int. Cl. F23c 5/08
U.S. Cl. 431—178 5 Claims



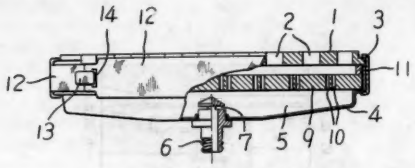
The muffle burner has a tubular member to divide the burner into two concentric air flow ducts about the fuel line. The ducts are supplied with air over separate lines from a common duct. The air flow in the line for the inner flow duct is regulated by the adjustment of the amount of air flow in the other line via the flow adjusting valve.

3,695,818

RADIANT BURNER

Katsushi Mizutani, Inazawa, Japan, assignor to Kabushiki Kaisha Rinnai Seisakusho, Nagoya-shi, Aichi-ken, Japan

Filed Oct. 30, 1970, Ser. No. 85,323
Claims priority, application Japan, Oct. 31, 1969, 44/86924
Int. Cl. F23d *13/12*
U.S. Cl. 431—328 4 Claims



A radiant burner comprises a casing with an open chamber supplied with gaseous fuel, and a heating place and burner plate mounted in spaced relation in the casing across the open chamber, the heating plate facing the outside. The heating plate is made of a fire-resisting material and has a large number of circular holes of equal size arranged at equal intervals throughout the entire extent thereof. The burner plate is also made of a fire-resisting material and it has a large number of holes arranged to face the solid portions of the heating plate between the circular holes.

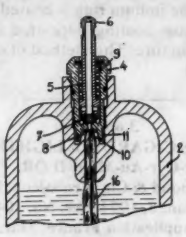
3,695,819

FLAME-ADJUSTER OF GAS CIGARETTE-LIGHTER

Jean Gaston Tricot, 53, Rue du Val d'Oshe, Saint Maurice, France

Filed Jan. 8, 1971, Ser. No. 104,926
Claims priority, application Great Britain, Feb. 2, 1970, 7004384/70
Int. Cl. F23d *13/04*
U.S. Cl. 431—344 6 Claims

In a gas cigarette-lighter a device for adjusting the flame is provided in the form of spaced resilient lugs projecting from the bottom of the well formed at the upper portion of the gas reservoir constituting the body of the cigarette-lighter, said lugs being disposed concentrically at spaced angular intervals about the axis of the bore connecting the bottom of said well to the inner space of the reservoir. A tapered seat member movable within said well under the control of the valve body is



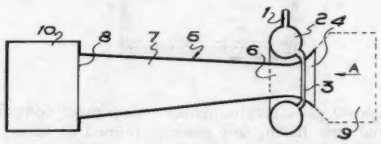
adapted to cap said lugs and move same more or less towards one another thus modifying accordingly the cross-sectional passage for the gas and therefore the gas output.

3,695,820

GAS BURNERS

Ivor Hawkes, Box 127, Lyme, N.H., and Joshua Swithenbank, Bryce Hill Lane, Hathersage, England

Filed April 20, 1970, Ser. No. 30,030
Claims priority, application Great Britain, April 19, 1969, 20,110/69
Int. Cl. F23d *13/40*
U.S. Cl. 431—354 8 Claims



A gas burner comprises an annular chamber surrounding the fuel and air inlet end of a throated nozzle, with a circular slit orifice opening from the chamber into the nozzle upstream of the throat, and a flame stabilizer at one end of the nozzle, fuel gas passing through the slit expanding to form a Coanda wall jet around the inlet peripheral converging wall of the nozzle and inducing a flow of air down the center of the nozzle, the radial pressure gradient created by the jet sheet following the converging wall of the nozzle to its throat bringing about a high degree of air entrainment, whereby stable combustion results, at a point determined by the flame stabilizer.

CHEMICAL

3,695,821

PROCESS FOR FAST DYEING OF FIBRES AND SHAPED ARTICLES

Nobuhiko Kuroki, Sakai, Kiroku Komatsu, Higashiosaka, Shuji Tamura, Kishiwada, and Hiroyuki Matsumoto, Yono, Japan, assignors to Nippon Kayaku Kabushiki Kaisha, Tokyo, Japan

No Drawing. Filed Nov. 18, 1970, Ser. No. 90,873
Claims priority, application Japan, Nov. 22, 1969, 44/93,357
Int. Cl. D06p *3/10*
U.S. Cl. 8—2 4 Claims

Fibers or shaped articles made from fibers of hydrophobic polymeric hydrocarbon, chlorinated polymeric hydrocarbon or polyester which do not contain a polar group but which do contain a methyl, methylene or methine group or a benzene nucleus may be fast dyed by dyeing the fibers or shaped articles with a dyestuff containing a sulfon azide group by a conventional dyeing process, treating the dyed article to decompose the sulfon azide to sulfonyl nitrene which forms a covalent bond with the fiber and washing the fast dyed fiber to remove the excess dyestuff.

3,695,822

METHOD OF COLORING A SHAPED BODY OF POLY-γ-ALKYL GLUTAMATE

Akira Akamatsu, Yasuo Takagi, and Makoto Iwatsuki, Kanagawa, Yoko Kida, Tokyo, and Kazuhisa Takeshita, Kanagawa, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

No Drawing. Continuation-in-part of abandoned application Ser. No. 27,421, Apr. 10, 1970. This application Sept. 22, 1970, Ser. No. 74,481
Claims priority, application Japan, Apr. 16, 1969, 44/29,519
Int. Cl. D06p *3/00*
U.S. Cl. 8—4 7 Claims

When a shaped body of a polymer essentially consisting of repeating units of γ-alkyl glutamate is brought into contact with a solution of a basic, acid, or metal

complex dye and of a polyamide in a solvent capable of reversibly swelling the surface layer of the polymer body, the solution is absorbed by the layer. After removal of the solvent, the dye and polyamide are locked in the surface layer. The resulting coloring of the body resists light, water, drycleaning fluids, and abrasion. The method is applicable to fibers and artificial leather based on polyglutamates.

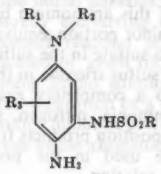
3,695,823

DYEING HUMAN HAIR WITH N-ARYLSULFONAMIDES AND AROMATIC AMINES

Rolf Rehberg, Niederhofheim, and Erik Wiskott, Bottmingen, Switzerland, assignors to Therachemie Chemisch Therapeutische Gesellschaft m.b.H., Dusseldorf, Germany

No Drawing. Filed Feb. 11, 1970, Ser. No. 10,642
Int. Cl. A61k 7/12
U.S. Cl. 8—10.2 **4 Claims**

In an aqueous composition for dyeing human hair comprising an oxidation dyestuffs combination of a developer component and a coupling component and customary dyestuff adjuvants, the improvement which comprises utilizing as said oxidation dyestuff combination, from 0.3% to 5% by weight of an oxidation dyestuff combination of (a) a developer component compound having the formula



wherein R is a member selected from the group consisting of a hydrocarbon having from 1 to 10 carbon atoms and an oxygenated hydrocarbon having from 7 to 10 carbon atoms, R_1 and R_2 are alkyl having from 1 to 4 carbon atoms and R_3 is a member selected from the group consisting of hydrogen, alkyl having 1 to 4 carbon atoms and alkoxy having from 1 to 4 carbon atoms, and (b) a coupling component compound, known for hair dyes, having the formula

$$X—Ar—Y$$

wherein Ar represents an aromatic nucleus, X represents a member selected from the group consisting of hydrogen, amino, dialkylamino having from 1 to 4 carbon atoms in the alkyls and hydroxyl, and Y represents a member selected from the group consisting of amino, dialkylamino having from 1 to 4 carbon atoms in the alkyls and hydroxyl, as well as the method of dyeing human hair utilizing said oxidation dyestuff combination of a developer component and a coupling component.

3,695,824

DYEING HUMAN HAIR WITH ISOXAZOLONE COUPLING COMPONENT

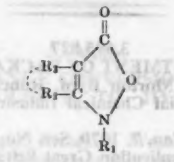
Rolf Rehberg, Brunnenstrasse 5, Heidesiedlung, 6231 Niederhofheim, Germany

No Drawing. Filed Apr. 20, 1970, Ser. No. 30,236
Int. Cl. A61k 7/12
U.S. Cl. 8—10.2 **3 Claims**

In an aqueous composition for dyeing human hair comprising an oxidation dyestuffs combination of a developer component and a coupling component and customary dyestuff adjuvants, the improvement which comprises utilizing as said oxidation dyestuffs combination, from 0.6% to 10% by weight of an oxidation dyestuffs combination of (a) a developer component compound, known for hair dyes, having the formula

$$(X)_nAr—NH_2$$

wherein Ar represents an aromatic nucleus, X represents a member selected from the group consisting of hydrogen, amino, dialkylamino having from 1 to 2 carbon atoms in the alkyls, alkoxy having from 1 to 2 carbon atoms, alkyl having from 1 to 2 carbon atoms and hydroxyl and n is an integer from 1 to 2, and (b) a coupling component compound having the formula



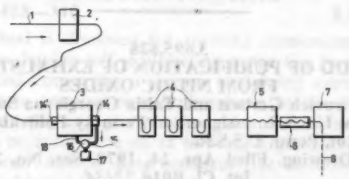
wherein R_1 is selected from the group consisting of hydrogen and an acid group capable of being hydrolytically cleaved, R_2 represents a hydrocarbonyl, R_3 represents a member selected from the group consisting of hydrogen and a hydrocarbonyl and R_2 and R_3 together represent the residue of a six membered ring, as well as the method of dyeing human hair utilizing said oxidation dyestuffs combination of a developer component and a coupling component.

3,695,825

ACOUSTIC METHOD FOR THE POSTTREATMENT OF FIBERS

Pal Greguss and Sandor B. Nagy, Budapest, and Janos Erdei and Lajos Toth, Nyergesujfalu, Hungary, assignors to Magyar Viscosa Gyar, Nyergesujfalu, Hungary

Continuation-in-part of application Ser. No. 616,205, Feb. 15, 1967. This application Mar. 30, 1970, Ser. No. 23,878
Inc. Cl. D01c
U.S. Cl. 8—137 **6 Claims**



An apparatus and a method for the posttreatment of fibers including the removal of valuable, reusable impurities from the fibers wherein the fibers are led through a wash-liquor in which an acoustic field is excited.

3,695,826

MOISTURE- AND HIGH-TEMPERATURE TREATMENT OF FABRICS BEFORE FINISHING OPERATIONS

Christian August Meier-Windhorst, Hamburg, Germany, assignor to Artos Dr. Ing. Meier-Windhorst Kommanditgesellschaft, Heidenkampsweg, Germany

No Drawing. Filed June 9, 1971, Ser. No. 151,533
Int. Cl. D06c 1/06
U.S. Cl. 8—149.3 **6 Claims**

In a process for the finishing or conditioning of textiles in fabric form, including bleaching, dyeing, treatment after printing or final or advanced finishing in which the treated fabric is, after impregnation with the treatment medium, exposed to a heat treatment, the improvement which comprises the fabric to be treated after impregnation and before undergoing a heat treatment to a moisture content, ranging from 10 percent above to 15 percent below saturation content in the case of fabrics consisting predominantly of natural or absorbent fibers

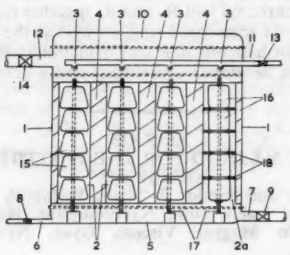
and which ranges from 10 percent below to 10 percent above saturation in the case of fabric consisting of predominantly less absorbent chemical or man-made fibers and thereupon subjecting the fabric to a treatment by heat in a medium consisting of steam or a steam/air mixture under super pressure, the vapor pressure or partial pressure whereof does not exceed 25 atmospheres absolute.

3,695,827

TREATMENT OF PACKAGES

Geoffrey Charles Morton Byrd, Runcorn, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Jan. 7, 1970, Ser. No. 1,084
Claims priority, application Great Britain, Jan. 15, 1969, 2,425/69
Int. Cl. B05c *8/02*
U.S. Cl. 8—155.2 12 Claims



A process for the treatment of a substantially cylindrical package which comprises passing a processing fluid through the package in a direction substantially parallel to its longitudinal axis.

3,695,828

METHOD OF PURIFICATION OF EXHAUST GASES FROM NITRIC OXIDES

Petr Petrovich Gertsen and Taisia Georgievna Suverneva, Perm, U.S.S.R., assignors to Permsky Politekhnichesky Institut, Perm, U.S.S.R.

No Drawing. Filed Apr. 14, 1970, Ser. No. 28,523
Int. Cl. B01d *53/34*
U.S. Cl. 423—239 7 Claims

A method of purification of exhaust gases from nitric oxides wherein the exhaust gases are subjected to sorption with an alkaline reagent for removing higher oxides, then the gas is contacted with pyrite FeS_2 sprayed with water, in which case the basic portion of the nitric oxide is reduced to elementary nitrogen, after which the purified gas with residual nitric oxide is contacted with carbon monoxide so that the residual nitric oxide is reduced to elementary nitrogen.

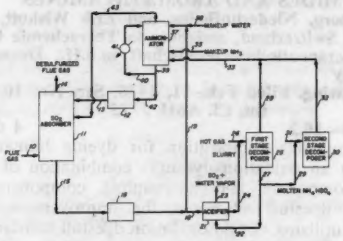
3,695,829

TWO STAGE AMMONIUM SULFATE DECOMPOSITION IN FLUE GAS DESULFURIZATION PROCESS

Lindsay I. Griffin, Jr., Summit, and Albert B. Welty, Jr., Westfield, N.J., assignors to Esso Research and Engineering Company

Continuation-in-part of application Ser. No. 869,226, Oct. 26, 1969. This application June 1, 1970, Ser. No. 41,941
Int. Cl. C01b *17/50, 17/60*
U.S. Cl. 423—242 2 Claims

Buildup of sulfate ions in a flue gas desulfurization process employing an aqueous ammoniacal absorbent is prevented by reducing a portion of the sulfate to sulfur dioxide. Sulfur dioxide is removed from flue gas by absorption in an aqueous solution of ammonium sulfite or ammonia. Some oxidation of tetravalent sulfur to hexavalent sulfur takes place. At least a portion of the absorber effluent solution is regenerated by acidification with ammonium bisulfate to liberate sulfur dioxide and to form an aqueous ammonium sulfate-ammonium bisulfate slurry. This slurry is decomposed in two stages. In the first stage, water is evaporated and the ammonium



sulfate content is decomposed into ammonium bisulfate. A major portion of this ammonium bisulfate is returned to the acidifier. A minor portion, equivalent to the amount of sulfite oxidized to sulfate in the sulfur dioxide absorber plus the amount of sulfur trioxide in the entering flue gas, is decomposed into a completely gaseous product mixture comprising ammonia, nitrogen, and sulfur dioxide. The gaseous decomposition products from the two decomposition stages are used in the preparation of fresh aqueous absorbent solution.

3,695,830

METHOD OF TREATING SODIUM BICARBONATE RECOVERED FROM ADIPONITRILE PRODUCING REACTION SOLUTIONS TO RECOVER SODIUM CARBONATE AND ORGANIC SUBSTANCES DEPOSITED THEREON

Hiroo Watanabe, Fujisawa, Koosuke Yamamoto, Kamakura, Takeshi Abe, Fujisawa, and Motoo Kawamata, Yokohama, Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

No Drawing. Filed May 26, 1969, Ser. No. 827,895
Claims priority, application Japan, May 31, 1968, 43/36,670; June 1, 1968, 43/37,062
Int. Cl. C07c *121/26;* C01d *7/12*
U.S. Cl. 423—206 9 Claims

Method of treating sodium bicarbonate by-produced in the production of adiponitrile by hydrodimerizing acrylonitrile by means of sodium amalgam and carbon dioxide in an aqueous solution of acrylonitrile in the presence of a catalyst and/or solvent, comprising the steps of separating by-produced sodium bicarbonate from the reaction solution, washing it with acrylonitrile and calcining the washed sodium bicarbonate at a temperature of 70 to 300° C. to convert it to sodium carbonate and at the same time to recover the organic substances deposited on the sodium bicarbonate.

3,695,831

ABSORPTIVE SODA ASH

David Goldstein, East Brunswick, N.J., assignor to FMC Corporation, New York, N.Y.

No Drawing. Filed Oct. 30, 1970, Ser. No. 85,778
Int. Cl. C01d *7/14*
U.S. Cl. 423—189 8 Claims

A low bulk density, highly absorptive soda ash, suitable for use in detergent formulations, is produced by

agglomerating fine soda ash particles with water, carbonating the resulting wet sodium carbonate monohydrate to produce predominantly sodium sesquicarbonate, and calcining the resulting carbonated mixture to soda ash.

3,695,832

PROCESS FOR REDUCING THE THIOUREA AND SULFATE CONTENT OF ALKALI AND ALKALINE EARTH-METAL RHODANIDES

Hans-Dieter Rupp, Mozartstr. 1, Erlenbach, Germany; and Gerhard Meyer, Blumenstr. 26; and Helmut Magerlein, Blumenstr. 40, both of Obernburg, Germany

No Drawing. Filed Nov. 15, 1971, Ser. No. 199,029

Claims priority, application Germany, Nov. 20, 1970, P 20 56 995.3

Int. Cl. C01c *3/20;* **C07c** *157/00*

U.S. Cl. 423—366 **10 Claims**

The process for reducing the content of both thiourea and the sulfate ion in a crude alkali or alkaline earth-metal rhodanide wherein the impure or crude rhodanide is heated in an aqueous solution at elevated pressures and temperatures while maintaining the molar ratio of thiourea:sulfate of the initial aqueous solution at a value of at least 3:1, thereby converting both thiourea and sulfate ion into gaseous reaction products and sulfur which are then separated or given off from the reaction mixture. The remaining liquid solution is concentrated, filtered and cooled for separation of a purified rhodanide, and the resulting mother liquor is preferably recycled for combination with fresh crude rhodanide.

3,695,833

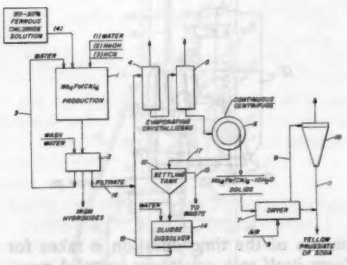
PRODUCTION OF ALKALI METAL FERROCYANIDE

Oscar Fontaine Wiedeman, New Orleans, La., and Kenneth Worden Saunders, Darien, and Michael Niall O'Connor, Norwalk, Conn., assignors to American Cyanamid Company, Stamford, Conn.

Continuation of abandoned application Ser. No. 823,672, May 12, 1969. This application June 16, 1971, Ser. No. 153,861

Int. Cl. C01c *3/10, 3/12;* **C01g** *49/10*

U.S. Cl. 423—367 **14 Claims**



An aqueous alkali metal cyanide solution is reacted with a solution of ferrous chloride in the presence of free alkali metal hydroxide. This produces a solution of alkali metal ferrocyanide and alkali metal chloride and a precipitate of iron hydroxide, which is filtered off. The filtrate is evaporated to give crystals of alkali metal ferrocyanide, preferably under vacuum, and at solution temperatures at which anhydrous alkali metal ferrocyanide will not form; the resulting crystals of alkali metal ferrocyanide are separated and dried.

3,695,834

CATION EXCHANGE CONVERSION OF HYDROXYLAMINE SULFATE TO HYDROXYLAMINE NITRATE

Earl J. Wheelwright, Richland, Wash., assignor to the United States of America as represented by the United States Atomic Energy Commission

No Drawing. Filed Oct. 12, 1970, Ser. No. 80,499

Int. Cl. C01b *21/14*

U.S. Cl. 423—395 **6 Claims**

Hydroxylamine sulfate is converted to hydroxylamine nitrate by passing an aqueous hydroxylamine sulfate solution through a cation exchange resin bed which adsorbs the hydroxylamine, washing the sulfate ion from the resin bed and eluting the hydroxylamine as hydroxylamine nitrate with nitric acid.

3,695,835

AMMONIUM POLYPHOSPHATE MANUFACTURE

Tommy Carter Kearns, 5225 Clover Drive, Lisle, Ill. 60532, and Yang Joo Kim, 928 Sharon Drive, Addison, Ill. 60101

No Drawing. Filed May 6, 1970, Ser. No. 35,223

Int. Cl. C01b *25/28, 25/38*

U.S. Cl. 423—310 **8 Claims**

A method is disclosed for forming ammonium polyphosphates having self-sequestering properties by quickly heating and converting a stream containing ammonium phosphate to ammonium polyphosphate. In one embodiment, ammonia and phosphoric acid are combined in a restricted reaction zone so as to form ammonium phosphates, steam and in some instances free ammonia, and are then subjected to hot gases so as to raise the temperature of the reaction mass to above about 450° F. whereby said ammonium phosphates are converted to ammonium polyphosphate.

3,695,836

SYNTHESIS OF PURE MINERAL SPHENE IN THE FORM OF UNIFORMLY SIZED PARTICLES

Julie Chi-Sun Yang, Somerville, N.J., assignor to Johns-Manville Corporation, New York, N.Y.

No Drawing. Filed May 26, 1970, Ser. No. 40,711

Int. Cl. C01b *33/24, 33/20*

U.S. Cl. 423—331 **7 Claims**

Method of synthesizing a pure mineral sphene in the form of uniformly sized particles adaptable for use as paint type pigments which are stable under exaggerated thermal and other aggressive conditions, comprising prereacting at ambient temperatures a mixture of oxides of the constituents consisting of lime, titania, and silica, and thereafter hydrothermally reacting at high temperature and pressure, within an atmosphere of substantially saturated water vapor.

3,695,837

PREPARATION OF CRYSTALLINE SYNTHETIC ZEOLITES

Stephen Sunderland, Widnes, Lancashire, and Thomas V. Whittam, Yarn-on-Tees, Yorkshire, England, assignors to Laporte Industries Limited, London, England

Filed May 28, 1970, Ser. No. 41,428
Claims priority, application Great Britain, May 29, 1969, 27,131/69
Int. Cl. C01b *33/28*
U.S. Cl. 423—328 13 Claims

Crystalline synthetic zeolites are prepared by reacting in an aqueous reaction mixture in suitable proportions a siliceous component, an alumina component, and an alkali metal component, a portion of the siliceous component being provided by a crystalline aluminosiliceous compound obtained by partially removing aluminum from the lattice of a crystalline zeolite with an acid while retaining at least some crystallinity.

3,695,838

PROCESS FOR RECOVERING MERCURY FROM WASTE WATERS OF INDUSTRIAL PROCESSES

Wilhelm Knepper, Marl, and Severin Austin, Sythen, Germany, assignors to Chemische Werke Huels, Aktiengesellschaft, Marl, Germany

No Drawing. Filed Oct. 30, 1970, Ser. No. 85,775
Claims priority, application Germany, Oct. 31, 1969, P 19 54 828.8
Int. Cl. C22b *43/00*
U.S. Cl. 425—106 6 Claims

Mercury present in waste waters from industrial processes, such as the electrolysis of alkaline-chlorides using the amalgam method, is recovered to prevent losses thereof and to prevent ecological contamination of waterways. Recovery is accomplished by converting the mercury to low-water-solubility compounds and/or to metallic mercury by the use of precipitants and subsequent separation thereof from the waste water.

3,695,839

PROCESS OF PRODUCING CHLORINE DIOXIDE

Joseph Callerame, Rochester, N.Y., assignor to Chemical Generators Inc., Rochester, N.Y.

No Drawing. Filed Apr. 27, 1970, Ser. No. 32,366
Int. Cl. C01b *11/00;* C01d *9/16;* C01f *11/36*
U.S. Cl. 423—479 5 Claims

Chlorine dioxide is produced by passing the reaction product of nitric acid and a chlorate of an alkali metal or alkaline earth metal through a cationic exchange resin or by heating the reaction product at a temperature of about 110° C. The reaction product of nitric acid and the chlorate contains chloric acid which may be utilized per se.

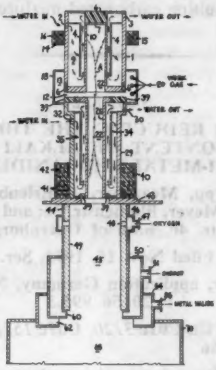
3,695,840

METHOD OF PREPARING METAL OXIDES WITH ARC GAS HEATERS

Emil Pfender, Minneapolis, Minn., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed May 4, 1970, Ser. No. 34,436
Int. Cl. C01g *23/04*
U.S. Cl. 423—613 21 Claims

Metal oxides, such as titanium dioxide, are prepared by vapor phase oxidation of corresponding metal halides in a reaction space supplied with heat energy from a gas stream heated by electrical energy. Arc gas heaters having front and back electrodes are described. Magnetic field means about the front electrode are used for preventing elongation of the arc struck between the front and back electrode and preventing location of the arc foot on the external surface of the front electrode of the arc gas heater.



3,695,841

PURIFYING HYDROGEN

Guenter Zirker, 78 Schelmenzeile; Walter Sanne, 24 Ungsteiner Strasse; Kurt Pilch, 56 Rheinrugenstrasse; and Gerhard Schulze, 46 Leuschnerstrasse, all of 6700 Ludwigshafen, Germany

No Drawing. Filed July 29, 1970, Ser. No. 58,991
Int. Cl. C01b *1/30*
U.S. Cl. 423—651 5 Claims

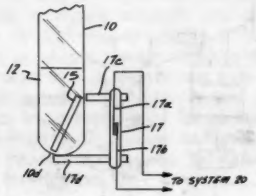
Hydrogen which has been obtained in the dehydrogenation of hydrocarbons or their derivatives is purified by passing it at elevated temperature over a supported catalyst which contains as the active ingredient nickel and as the carrier aluminum oxide, magnesium oxide or a mixture of the two.

3,695,842

METHOD AND SYSTEM FOR ANALYZING A LIQUID

Michael D. Mintz, Edison, N.J., assignor to International Technidyne Corporation, Edison, N.J.

Filed Mar. 12, 1970, Ser. No. 19,003
Int. Cl. G01n *11/10, 33/16*
U.S. Cl. 23—230 R 32 Claims



An analysis of the time duration it takes for a liquid to transform itself to a gelatinous or solid mass. A vessel contains a magnetically permeable member immersed in the liquid and magnetic flux lines are passed through the member and the zone. To agitate the liquid, a relative motion is produced between the zone and the member. A predetermined change in the magnetic flux lines is detected when the liquid transforms itself and a signal is generated at the time of such detection.

3,695,843

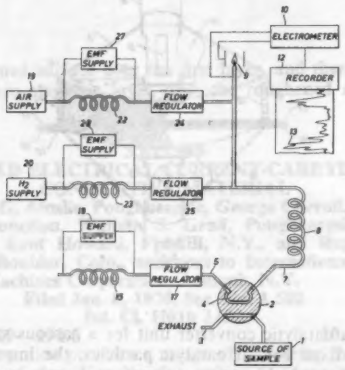
Patent Not Issued For This Number

3,695,844

GAS CLEANING CONDUIT

Harold L. Wise, Arley Walters, and Ray G. Cook, Houston, Tex., assignors to Shell Oil Company, New York, N.Y.

Filed Sept. 28, 1970, Ser. No. 75,858
Int. Cl. G01n *31/08, 31/12*
U.S. Cl. 23—232 C **2 Claims**



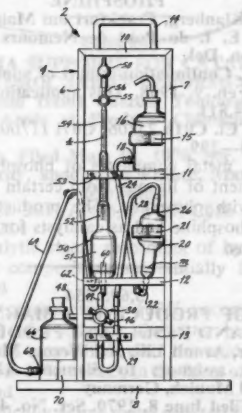
A gaseous fluid is freed of a heat-sensitive contaminant by flowing the fluid through a capillary sized conduit having metal walls through which an electric current is flowed to heat the fluid within the conduit to at least about 700° C.

3,695,845

APPARATUS AND PROCESS FOR MEASURING THE AMOUNT OF AIR IN GASEOUS MIXTURES OF CARBON DIOXIDE AND AIR

Martin C. Watz, Worthington, Ohio, assignor to Anheuser-Busch, Incorporated, St. Louis, Mo.

Filed Oct. 6, 1970, Ser. No. 78,511
Int. Cl. G01n *31/06*
U.S. Cl. 23—232 R **18 Claims**



The amount of air in a gaseous mixture of carbon dioxide and air is determined by filling a calibrated vessel or burette with a potassium hydroxide solution and similarly filling a reservoir of known volume with water. Then the gaseous mixture is introduced into the reservoir, displacing the water therefrom, until the mixture occupies the known volume of the reservoir. The water so displaced, however, maintains the gaseous mixture under pressure and when a valve which is disposed between the reservoir and the vessel is turned, the displaced water forces the known volume of the gaseous mixture into the vessel, causing the mixture to bubble into the potassium hydroxide solution therein. As the gaseous mixture bubbles into the potassium hydroxide solution, the carbon dioxide is absorbed while the air passes completely through the solution and collects above it in the upper end of the calibrated vessel. By comparing the volume of air collected in the vessel with the volume of the gaseous mixture initially in the reservoir, it is possible to ascertain the purity of the carbon dioxide mixture.

3,695,846

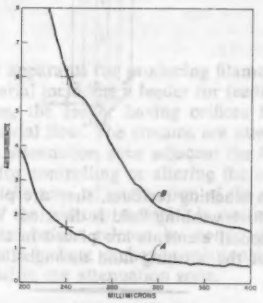
Patent Not Issued For This Number

3,695,847

HYDROCARBON DETECTOR

Tomas Hirschfeld, 1155 Concord St., Framingham, Mass. 01701

Continuation-in-part of abandoned application Ser. No. 138,717, Apr. 29, 1971. This application Nov. 15, 1971, Ser. No. 198,982
Int. Cl. G01n *21/38, 33/22*
U.S. Cl. 23—232 R **18 Claims**



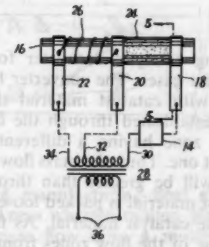
Method of detecting the vapors of aromatic and unsaturated hydrocarbon by reacting the vapor with a film of polytetrafluorethylene sulfonic acid, and examining the ultraviolet transmission characteristics of the reacted film.

3,695,848

GAS DETECTING DEVICE

Naoyoshi Taguchi, 1-2 Hedauemachi, Nagata-ku, Kobe, Japan

Filed Apr. 7, 1970, Ser. No. 26,228
Int. Cl. G01n *27/16*
U.S. Cl. 23—254 E **6 Claims**



A gas detecting device for detecting inflammable gases which includes a semiconductor material, means for

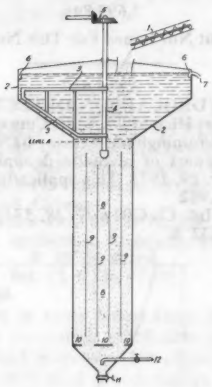
passing a current through the semiconductor material to determine changes in resistivity caused by the presence of the inflammable gas, and heating means for heating the semiconductor material to obtain an optimum sensitivity characteristic.

3,695,849

LEACHING PROCESS

Jorge Rodriguez, Las Tranqueras 7714, Santiago, Chile

Filed Aug. 13, 1970, Ser. No. 63,556
Claims priority, application Chile, Aug. 13, 1969, 23,823
Int. Cl. B01d *11/02*
U.S. Cl. 23—270 **6 Claims**



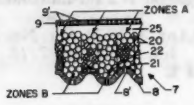
To wash leaching residues, they are placed in a tower through which washing fluid is directed. Vertical and perhaps horizontal elements are placed in the tower to control flow of the washing fluid through the residues.

3,695,850

SELF-CLEANING CATALYTIC CONVERTER

Martin W. Perga, Hoffman Estates, and Ted V. De Palma, Roselle, Ill. (both of 30 Algonquin Road, Des Plaines, Ill. 60016)

Filed Aug. 31, 1970, Ser. No. 72,249
Int. Cl. F01m *3/16*
U.S. Cl. 23—288 F **4 Claims**



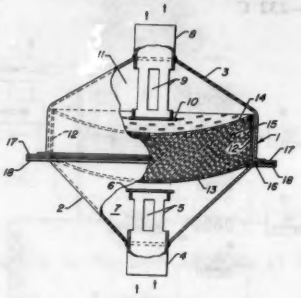
A self-cleaning catalytic converter for conversion of soot-laden exhaust gases. The converter has a catalyst retaining section with catalyst material therein. Adjacent flow zones are established through the catalyst material, with each flow zone having a different flow resistance than the adjacent one. Thus, the mass flow velocity through one flow zone will be greater than through an adjacent one. The catalyst material is packed loosely which permits movement of the catalyst material. As the pressure drop increases in some of the flow zones from soot deposition, the catalyst material will move from each flow zone to an adjacent flow zone thus permitting more efficient conversion of the soot within the exhaust gases.

3,695,851

EXHAUST GAS CATALYTIC CONVERTER

Martin W. Perga, Hoffman Estates, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Continuation-in-part of application Ser. No. 795,122, Jan. 29, 1969. This application Oct. 26, 1970, Ser. No. 84,013
The portion of the term of the patent subsequent to Mar. 2, 1988, has been disclaimed
Int. Cl. B01j *9/04;* **F01n** *3/14*
U.S. Cl. 23—288 F **4 Claims**



In a catalytic converter unit for a gaseous stream having a fixed bed of catalyst particles, the improved construction which uses a pair of uniformly spaced apart perforated members to support the catalyst therebetween and each of the perforated members is of a dished design. The member adjacent the gas inlet section is concave with respect to the catalyst and the downstream member is such as to be convex inwardly toward the particles, such that the particles will be held in a tight non-settling manner when the unit is subjected to expansion from high temperature catalytic conversion of the gas stream.

3,695,852

Patent Not Issued For This Number

3,695,853

TRANSITION METAL COMPLEXES OF PHOSPHINE

Frank Karl Klanberg, Frankfurt am Main, Germany, assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation-in-part of application Ser. No. 704,267, Feb. 9, 1968. This application Apr. 1, 1970, Ser. No. 24,811
Int. Cl. C01b *25/06;* **C07f** *11/00, 15/00*
U.S. Cl. 423—299 **18 Claims**

Transition metal complexes of phosphine are formed by displacement of ligands from certain transition metal complexes with phosphine. The products are useful as sources of phosphine and as catalysts for the polymerization of olefins.

3,695,854

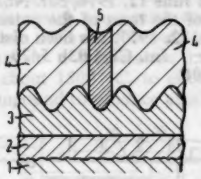
METHOD OF PRODUCING A MAGNETIC LAYER AND RESULTANT PRODUCT

Viktor Egger, Arnulf Lill, and Werner Metzdorf, Munich, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed June 8, 1970, Ser. No. 44,398
Claims priority, application Germany, June 11, 1969, P 19 29 687.8
Int. Cl. G11c *11/04;* **C23b** *5/50, 5/58*
U.S. Cl. 29—183.5 **12 Claims**

Method of producing a magnetic storage layer having uniaxial anisotropy which involves depositing a fine

grained smooth surfaced non-magnetic metal onto a carrier wire, applying a second non-magnetic layer having



a roughened surface over the first layer, and then applying a ferro-magnetic layer over the roughened surface.

3,695,855

DOPED ELECTRICAL CURRENT-CARRYING CONDUCTIVE MATERIAL

Norman G. Ainslie, Poughkeepsie, George Cheroff, Hopewell Junction, William S. Graff, Poughkeepsie, and James Kent Howard, Fishkill, N.Y., and Rupert F. Ross, Boulder, Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 8, 1970, Ser. No. 1,502

Int. Cl. H01b *1/02*

U.S. Cl. 29—191.6 **10 Claims**

This invention provides a means of increasing the time-to-failure of doped conductive stripes by depositing regions of dopant rejuvenant upon regions in the stripe wherein dopant depletion is most apt to occur under current stress. This invention also provides a means of rejuvenating regions wherein dopant depletion has occurred by periodically applying heat to a microelectronic configuration containing doped conductive thin films for interconnection purposes, said thin films containing local, discontinuous deposits of dopant rejuvenant over regions within the film wherein temperature gradients or diffusion barriers arise under current stress resulting in mass flux divergences in said regions, i.e., a resultant efflux of dopant from said region. Application of heat in this manner permits diffusion of dopant rejuvenant from the localized dopant rejuvenant source into the region from which dopant has migrated during service, thereby rejuvenating the microelectronic configuration and enabling its continued use.

3,695,856

MAGNESIA SUPPORTS FOR CATALYSTS IN HYDROCARBON REFORMING

Claude Paul and Henri Cheron, Toulouse, France, assignors to Azote et Produits Chimiques, Toulouse, France

No Drawing. Filed Mar. 19, 1970, Ser. No. 21,213

Claims priority, application France, Mar. 20, 1969, 6907428

Int. Cl. B01j *11/06, 11/22*; C01b *2/14*

U.S. Cl. 48—214 **8 Claims**

For the catalytic steam reforming of hydrocarbons, a novel catalyst composition substantially free of alkali metal oxide and

(a) a carrier comprising 70–100% uncombined magnesia, 0.30% of a spinelle, the latter being a product of magnesia combined with an oxide of trivalent metal, and 0–15% of SiO_2 in the form of an aluminum silicate, and

(b) a catalytically active metal selected from the group consisting of cobalt, nickel and mixtures thereof.

At least a portion of the active metal is in the form of a coating on the internal porous surfaces of the carrier. This catalyst has a long life and in particular does not lead to carbon black formation.

3,695,857

Patent Not Issued For This Number

3,695,858

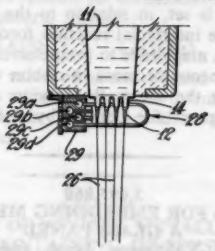
METHOD AND APPARATUS FOR PRODUCTION OF GLASS FIBERS

Robert G. Russell, Granville, Ohio, assignor to Owens-Corning Fiberglas Corporation

Continuation of application Ser. No. 82,077, Oct. 19, 1970, which is a continuation of application Ser. No. 759,278, Sept. 12, 1968, both now abandoned. This application Oct. 29, 1971, Ser. No. 193,964

Int. Cl. C03b *37/10*

U.S. Cl. 65—2 **31 Claims**



Method and apparatus for producing filaments of heat-softenable material including a feeder for feeding material in molten form, the feeder having orifices from which streams of material flow. The streams are attenuated into filaments in an attenuation zone adjacent the feeder. Gaseous material for controlling or altering the environment is released into the zone of attenuation of the stream. The temperature of the gaseous material is controlled in the attenuation zone before release by conducting a heat-exchange medium in heat exchange relationship with the gaseous material in the attenuation zone.

3,695,859

MANUFACTURE OF FLOAT GLASS

George Alfred Dickinson, Bryn Mair, Prescot Road, St. Helens, England, and Harold Charnock, 89 Chequer Lane, Up Holland, near Wigan, England

Filed July 24, 1970, Ser. No. 57,928

Claims priority, application Great Britain, July 28, 1969, 37,860/69

Int. Cl. C03b *18/02*

U.S. Cl. 65—99 A **7 Claims**

A method of manufacturing float glass of a desired width and thickness wherein molten glass is delivered at a controlled mass flow onto a molten metal bath to establish a molten glass layer and, while permitting the molten glass to flow freely laterally to its limit width and thickness, a glass ribbon is developed and subjected

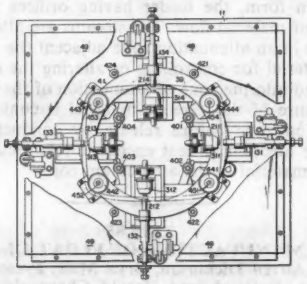
to a temperature regime while tractive force and outwardly and longitudinally directed forces are applied thereto. The ribbon advanced by the tractive force is discharged as a ribbon of a desired width and thickness at the same mass flow rate and with an increased final velocity. The advancing ribbon, which has a smooth edge profile defined by a never increasing width, includes an initial region contiguous with the molten glass layer and a terminal region contiguous with an attenuation region comprised of at least a downstream portion of the initial region. The outwardly and longitudinally directed forces are applied to the glass margins in the attenuation region where the glass is in a deformable state and is simultaneously thinned and reduced in width. Throughout the initial region, the glass is in a deformable or more fluid state. The magnitude of the outwardly and longitudinally directed forces is set, in relation to the applied tractive force and to the interfacial reaction forces between bath and ribbon, at a magnitude to progressively and gradually control simultaneous decrease in ribbon width and thickness throughout the attenuation region and to maintain the smooth edge profile defined by a never increasing width.

3,695,860

APPARATUS FOR EMBEDDING METAL PINS IN A GLASS PANEL

Tadao Katuta, Yokohama, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed July 22, 1970, Ser. No. 57,113
Int. Cl. C03c *27/02*
U.S. Cl. 65—154 **10 Claims**



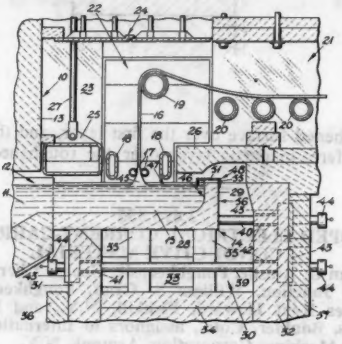
An apparatus for embedding metal pins in a glass panel having a base frame on the surface of which is performed the work of embedding one end of metal pins for fitting other members by the opposite end thereof in the inner wall of a glass panel having a skirt portion formed substantially vertically around its outer peripheral surface. A plurality of first pin chuck means selectively rotatable to lie substantially in a predetermined horizontal position and other positions respectively outwardly of a setting portion on the base frame of the glass panel, are positioned so as to securely carry each one end of a metal pin by subjecting the forward ends thereof to selective energization by a vacuum source. A plurality of second pin chuck means are provided, and, when each first pin chuck means is rotated to the horizontal position, the second pin chuck means are capable of receiving and securely carrying the opposite end of each metal pin from each first pin chuck means by subjecting the forward ends thereof to selective energization by the vacuum source, the opposite end being mounted by the other members, and which are movable in back and forth directions. A plurality of heating sources are also provided about the forward end of each second pin chuck means.

3,695,861

DRAW POT SKIMMER

James T. Zellers, Jr., Charleston, W. Va., assignor to Libbey-Owens-Ford Company, Toledo, Ohio

Filed June 12, 1970, Ser. No. 45,622
The portion of the term of the patent subsequent to Mar. 22, 1977, has been disclaimed
Int. Cl. C03b *5/20*
U.S. Cl. 65—206 **5 Claims**



Skimming the surface of the pool of molten glass adjacent the rear wall of the draw pot in an electrically heated, Colburn type sheet glass producing apparatus. An L-shaped skimmer supported upon the rear pot wall includes a vertical leg extending into the pool of molten glass along the length of the rear pot wall parallel to and at a short distance therefrom to trap particles of refractory eroded from the surface of the rear pot wall and prevent the particles from being drawn into the sheet and forming pot lines therein.

3,695,862

Patent Not Issued For This Number

3,695,863

STEELMAKING

Arnold Metcalf, 16 The Chase, Clarkdell, Sheffield 10, England, and Willis Bateman, 96 Kilton Hill, Worksop, England

Filed Jan. 13, 1963, Ser. No. 337,355
Int. Cl. C21c *5/28*
U.S. Cl. 75—60 **6 Claims**

5. In a process for the manufacture of steel which includes the step of refining a molten ferrous metal charge by top blowing it with at least one stream of oxygen, the improvement comprising introducing into said oxygen stream, continuously throughout said refining step, a nongaseous fluidized fuel in an amount sufficient to suppress the formation of iron oxide fumes.

3,695,864

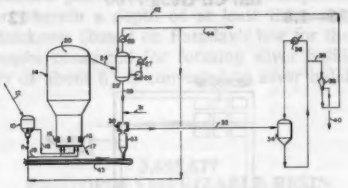
ALKALI METAL PRODUCTION

Hal B. H. Cooper, 4234 Chevy Chase Drive, Pasadena, Calif. 91103

Continuation of application Ser. No. 613,373, Dec. 28, 1966, which is a continuation-in-part of application Ser. No. 498,061, Oct. 19, 1965. This application Apr. 29, 1970, Ser. No. 33,089
Int. Cl. C27b *27/00, 5/16*
U.S. Cl. 75—66 **9 Claims**

Method for producing elemental alkali metal from a reducible alkali metal compound in a carbothermic reduction furnace involving, in a preferred embodiment,

passing a downwardly moving bed through a heating zone of the furnace with a reducible alkali metal compound and a carbon reducing metal dispersed in the bed in particles smaller than the electrically-conductive balls with the reducible alkali metal compound comprising on a weight basis less than 50% of the bed, heating the bed with electric current to a temperature in the range of about 900° C. to about 1500° C. to effect reduction of the alkali metal compound to produce alkali metal vapors



which are removed overhead. The reducible alkali metal compound may be an alkali metal carbonate, an alkali metal hydroxide, and an alkali metal compound (such as borax) having a negative group containing an amphoteric metal which latter compound provides upon reduction the alkali metal vapor and the amphoteric metal in a reduced solid electricaly-conductive form. The latter alkali metal-amphoteric metal compounds in providing electrically-conductive solid residue upon reduction are processible in beds of varying types.

3,695,865

PROCESS FOR THE PRODUCTION OF CYLINDRICAL HOLLOW BODIES IN THE CENTRIFUGAL CASTING PROCESS

Karl Wölker, Zell, Wiesental, Germany, assignor to Pleuco-Gesellschaft mbH, Stuttgart-Unterturkheim, Germany

No Drawing. Filed Feb. 20, 1970, Ser. No. 13,181
Claims priority, application Germany, Feb. 21, 1969, P 19 08 856.3
Int. Cl. B22d *13/02*; C22c *37/00*
U.S. Cl. 75—130 R **8 Claims**

Process for the production of cylindrical hollow bodies with a pearlitic structure from cast iron material by superheating a eutectic or hypereutectic melt after adding alloying elements so that in subsequent casting a mixture supersaturated with carbon results, and the products thereof.

3,695,866

VANADIUM-BASE ALLOY HAVING A HIGH CREEP-RUPTURE STRENGTH AND AN IMPROVED RESISTANCE TO CORROSION

Peter Wincierz, Fullerstr. 22, Oberursel, Taunus, Germany; Manfred Rühle, Robert-Blum-Str. 10; and Heinz Küchler, Freiligrathstr. 17, both of Frankfurt am Main, Germany; Hans Ulrich Borgstedt, Konigsbergerstrasse, Karlsruhe-Waldstadt, Germany; and Horst Otto Böhm, Pastor Felke Str. 1, Karlsruhe, Germany

No Drawing. Filed May 26, 1969, Ser. No. 827,916
Claims priority, application Germany, May 25, 1968, P 17 58 402.0
Int. Cl. C22c *27/00*
U.S. Cl. 75—134 V **8 Claims**

An alloy containing traces to 5% titanium, traces to 1.2% zirconium, traces to 1.2% hafnium, said elements titanium, zirconium, and hafnium totaling at least 0.1%, a total of 5–20% of the elements chromium and molybdenum, traces to 2% silicon, traces to 4% germanium, balance vanadium, traces of usual metallic impurities which are due to the process of producing the vanadium and, based on the vanadium content, 400–3000 p.p.m. oxygen, 100–1500 p.p.m. nitrogen, and 100–1500 p.p.m. carbon, the total of oxygen, nitrogen, and carbon being not in excess of 4000 p.p.m.

3,695,867

THERMOELECTRIC ALLOYS

Emanuel Andrew Skrabek, Baltimore, and Donald Smith Trimmer, Timonium, Md., assignors to Teledyne, Inc., Los Angeles, Calif.

Continuation-in-part of application Ser. No. 593,469, Nov. 10, 1966, which is a continuation-in-part of application Ser. No. 509,511, Nov. 24, 1965. This application Feb. 2, 1970, Ser. No. 8,043
Int. Cl. C22c *31/00*
U.S. Cl. 75—134 G **2 Claims**

Improved alloys suitable for thermoelectric applications and having the general formula:

$$(AgSbTe_2)_{1-x}+(GeTe)_x$$

wherein x has a value of about .80 and .85, have been found to possess unexpectedly high thermoelectric properties such as efficiency index, as well as other improved physical properties.

3,695,868

PREPARATION OF POWDER METALLURGY COMPOSITIONS CONTAINING DISPERSED REFRACTORY OXIDES AND PRECIPITATION HARDENING ELEMENTS

Leon F. Norris, Fort Saskatchewan, Alberta, Canada, assignor to Sherritt Gordon Mines Limited, Toronto, Province of Ontario, Canada

No Drawing. Filed June 22, 1970, Ser. No. 48,528
Int. Cl. B22f *1/00*
U.S. Cl. 75—206 **5 Claims**

Nickel-chromium alloy compositions containing dispersed refractory oxide particles and precipitation hardening elements such as aluminum are prepared by blending nickel-chromium alloy-refractory oxide powder with composite nickel coated aluminum powder or nickel-aluminum alloy powder and, optionally, with titanium hydride powder. This powder blend is compacted and vacuum sintered to reduce the oxygen content to less than 1000 parts per million and place the aluminum (and titanium when present) in solution with the nickel-chromium alloy.

The product is suitable for processing in accordance with prior art fabrication methods to produce wrought dispersion and precipitation strengthened nickel-chromium alloy products.

3,695,869

METHODS OF PREPARING FIBROUS METAL MATERIALS AND TO MATERIALS PREPARED THEREBY

Andre Hivert, Pontoise, Pierre Lepetit, Saint-Vrain, and Andre Walder, Bourg-la-Reine, France, assignors to Office National d'Etudes et de Recherches, Chatillon-sous-Bagneux, France

No Drawing. Filed Sept. 18, 1970, Ser. No. 73,613
Claims priority, application France, Sept. 23, 1969, 6932391
Int. Cl. B22f *1/00*
U.S. Cl. 75—211 **15 Claims**

The invention provides a method of preparing a fibrous metal material, which comprises, firstly, covering an electrically conductive carbon skeleton, having a general shape corresponding to that of the finished material which it is desired to obtain, with a deposit of a slightly electropositive metal or alloy, the electropositivity not being greater than 0.7 and, secondly, eliminating the afore-mentioned skeleton by oxidation at a high temperature leaving the deposited metal or alloy only, having a fibrous texture.

3,695,870

PROCESS OF PRODUCING A LATENT IMAGE

Takashi Wakabayashi, Ibaragi, Shiro Hozumi, Sakai, and Kanji Sugihara, Hirakata, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Nov. 17, 1970, Ser. No. 90,331
Claims priority, application Japan, Dec. 2, 1969, 44/97,417, 44/97,418
Int. Cl. G03g *13/22*
U.S. Cl. 96—1 E 7 Claims

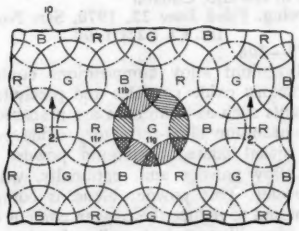
A process of producing a latent image. An electric field is applied in the shape of the desired image to an insulating memory plate comprising resin having finely divided conductive particles dispersed therein whereby the electric field-struck area has the electrical resistivity thereof changed from a high electrical resistance to a low electrical resistance. An electric current is supplied to said electric field-struck area whereby said low electrical resistance is preserved permanently as a memorized image.

3,695,871

METHOD OF SCREENING A COLOR IMAGE REPRODUCING DEVICE

Howard G. Lange, 1731 N. Stratford Road, Arlington Heights, Ill. 60004

Original application June 4, 1969, Ser. No. 830,288. Divided and this application Nov. 27, 1970, Ser. No. 93,305
Int. Cl. G03g *13/22*
U.S. Cl. 96—1.2 9 Claims



The screen of a three gun shadow mask type of color cathode-ray tube is formed of three interleaved sets of filters, with the filters of each set predominantly transmissive of an assigned one of the primary colors green, blue and red. The filters are circular and are of such diameter that their outer peripheral portions overlap, leaving a central section of each filter free to accept a phosphor that emits light of a wavelength for which the associated filter is predominantly transmissive. The screen, in effect, has a multiplicity of elemental picture areas grouped to form color triads and individually surrounded by a filter that attenuates substantially all visible light.

Screening is accomplished with photosensitive coatings that are selectively exposed by actinic energy projected through the shadow mask. Each such exposure develops an image of one set of filters which is then developed. This process is conducted for each of the three colors to form three sets of filters with overlapping peripheral portions. Thereafter or essentially at the same time, the phosphor materials are deposited with the emission of each phosphor material properly correlated colorimetrically with the filter over which it is superposed.

3,695,872

Patent Not Issued For This Number

3,695,873

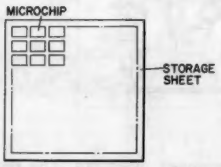
Patent Not Issued For This Number

3,695,874

MICROELECTROPHOTOGRAPHIC SHEET

Lee Allen Carlson, Southboro, and Richard George Miekka, Sudbury, Mass., assignors to Dennison Manufacturing Company, Framingham, Mass.

Filed Jan. 11, 1971, Ser. No. 105,370
Int. Cl. G03g *7/00*
U.S. Cl. 96—1.8 12 Claims



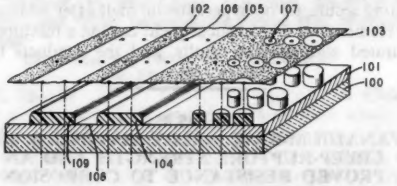
Microelectrophotographic sheet, comprising an electrophotographic layer of zinc oxide particles in an insulator binder on a conductive base sheet, for producing microelectrophotographs for storage and retrieval of information and in which the surface of the base sheet to which the electrophotographic layer is applied has a maximum Sheffield Smoothness of 40 and no more than 5% by volume of the photoconductive zinc oxide has an agglomerate particle size greater than 10 microns.

3,695,875

CONTRAST IN COMPUTER GENERATED PHOTOETCHING MASKS

William Charles Gormley Ortel, New York, N.Y., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill and Berkeley Heights, N.J.

Filed Oct. 27, 1970, Ser. No. 84,433
Int. Cl. G03c *5/04, 5/00*
U.S. Cl. 96—27 4 Claims



A method for producing high contrast photographic images. From the low contrast original, a first copy is made on high contrast film, thereby reversing the image. Exposure time is controlled in order to underexpose the lightest areas which should have been opaque in the original. From this copy, a second copy is made on high contrast film, again reversing the image. Again, the lightest areas of the first copy which should have been opaque are underexposed by controlling the exposure time. These areas correspond to the darkest areas in the original transparency which should have been light. By correctly controlling the exposure times of these two steps, a transparency is produced with nearly binary density scale, thus producing a high contrast mask suitable for photoetching.

3,695,876
PHOTOSENSITIVE LAYER FROM THE ELECTROLYSIS OF SILVER AND HALIDE IONS
Arnold Hoffman, Brookline, Mass., assignor to Polaroid Corporation, Cambridge, Mass.
No Drawing. Filed Nov. 27, 1970, Ser. No. 93,439
Int. Cl. G03c 5/54
U.S. Cl. 96—29 19 Claims

A photosensitive element suitable for use in diffusion transfer processes is prepared by imposing a constant current to a layer of silver in the presence of halide ions. The thus-produced photosensitive element comprises a layer of silver wherein a depth of at least three microns apparent thickness (based on Faraday's law for the number of coulombs consumed for forming silver halide having a density of about 6) is converted to silver halide.

3,695,877
PHOTOPOLYMERIZABLE RESIN COMPOSITIONS
Yasuo Taneda, Kiyomi Naka, and Akihiro Horike, Tokyo, Japan, assignors to Teijin Limited, Osaka, Japan
No Drawing. Filed Aug. 10, 1970, Ser. No. 62,643
Claims priority, application Japan, Aug. 13, 1969, 44/64,059
Int. Cl. G03c 1/68
U.S. Cl. 96—35.1 10 Claims

Photopolymerizable resin compositions composed essentially of unsaturated polyester, crosslinking agent and optical sensitizer, which is characterized in that said unsaturated polyester is a carboxyl group-containing unsaturated polyester obtained by polycondensation of an acid component comprising:

(1)(a) At least 5 mol percent to the total acid component of aromatic polycarboxylic acid containing at least three carboxyl groups, or functional derivative thereof, (b) at least 30 mol percent to the total acid component of ethylenically unsaturated dicarboxylic acid or functional derivative thereof, and (c) zero to 50 mol percent to the total acid component of dicarboxylic acid containing no ethylenic unsaturation, or functional derivative thereof,

and an alcoholic component composed substantially of

(2) Aliphatic glycol.

The photopolymerizable resin compositions of the present invention exhibit excellent properties such as solvent resistance, strength, hardness and dimensional stability.

3,695,878
METHOD OF PRODUCING AUTOSTEREO PICTURES
Walter L. Salyer and James E. Huffaker, both of P.O. Box 511, Kingsport, Tenn. 37662
Original application May 26, 1967, Ser. No. 641,554, now Patent No. 3,520,588. Divided and this application Apr. 22, 1970, Ser. No. 38,630
Int. Cl. G03c 9/00
U.S. Cl. 96—40 10 Claims

An autostereo picture composed of a plurality of separate picture images some of which contain parallax, thus giving a stereo illusion to the combined composite picture. Combinations may include images appearing at a point of convergence (in the plane of the picture, support, or frame), in addition to others at various positions either behind or in front of the point of convergence. The final picture form may also include various special relationships between two and three-dimensional images, for example: (1) a two-dimensional in the plane of the point of convergence and a three-dimensional appearing behind that plane, and (2) a three-dimensional in front of the plane of the point of convergence, a three-dimensional behind that plane and a two-dimensional in that plane.

The method for the production of such autostereograms may include the conversion of at least one two-dimensional picture image into a lineiform record containing parallax. This can be accomplished by correctly focusing such a subject or object image upon the photosensitive layer or film of an autostereographic device and thereafter providing the relative motions within that device and with respect to the object image. Pictures thus formed are then combined with others or combinations of others, either similar in construction or of the two-dimensional type, to form a finished autostereographic picture.

3,695,879
HOLOGRAM LIFE EXTENSION
Frank P. Laming and Solomon L. Levine, Poughkeepsie, and Glenn T. Sincerbox, Wappingers Falls, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
No Drawing. Filed Apr. 20, 1970, Ser. No. 30,306
Int. Cl. G03c 5/24
U.S. Cl. 96—48 16 Claims

Laser-interrogated holograms produced in silver halide emulsions by an etch-bleach development process have desirable properties of light diffraction efficiency but are subject to rapid loss of diffraction effectiveness over periods of exposure to high energy density levels of interrogation light. It has been found that post-development hardening, especially by successive application of a hardening solution and heat, can prolong effectiveness halflife by a considerable factor. The heating step is most effective when carried out in vacuum or inert gaseous atmosphere.

3,695,880
PROCESS FOR THE PRODUCTION OF PHOTOGRAPHIC IMAGES
Hans-Joachim Kabbe and Anita von König, Leverkusen, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany
No Drawing. Filed May 27, 1970, Ser. No. 41,084
Claims priority, application Germany, June 19, 1969, P 19 31 056.6
Int. Cl. G03c 7/00
U.S. Cl. 96—52 5 Claims

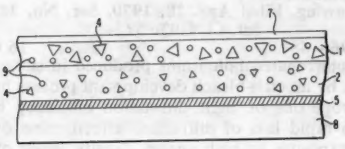
Processed photographic silver images are stabilized by the addition of antibronzing agents against loss of density and changes in image tone upon high gloss drying at high temperatures. Compounds with a high antibronzing effect are compounds of the dimercapto-pyrazolo-pyrimidine series.

3,695,881
POSITIVE IMAGE PRODUCTION WITH UNFOGGED INTERNAL IMAGE SILVER HALIDE EMULSION CONTAINING MERCAPTAN RETARDER AND A SURFACE LATENT IMAGE SILVER HALIDE EMULSION
George W. Luckey, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
No Drawing. Filed Nov. 25, 1970, Ser. No. 92,907
Int. Cl. G03c 1/76, 3/00, 5/54
U.S. Cl. 96—29 12 Claims

Exposed grains of a silver iodohalide coating such as a surface image emulsion containing silver iodo bromide are developed, releasing iodide ions. The iodide ions released imagewise in contact with a different, unexposed silver halide layer, such as an internal image emulsion, accelerate solution of these unexposed silver halide grains which have been treated with a heterocyclic nitrogen compound which retards solution of the silver halide grains in a silver halide solvent such as sodium thiosulfate. Thus, fixing of the unexposed layer produces a

positive image of silver halide. Positive or negative images can be produced from this silver halide image by methods known in the art such as solvent transfer, dye bleach, dye transfer, reduction and incorporated coupler systems. X-ray images can also be enhanced using the system described in this invention.

3,695,882
HIGH-SPEED FINE GRAIN LIGHT-SENSITIVE MATERIAL
Akira Kumai and Takaaki Terashita, Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Aug. 3, 1970, Ser. No. 60,437
Claims priority, application Japan, Aug. 1, 1969, 44/60,806
Int. Cl. G03c *1/76*
U.S. Cl. 96—68 **6 Claims**



A high-speed fine grain silver halide light-sensitive material for black-and-white photography, comprising a support having superposed thereon at least two gelatino-silver halide photographic emulsion layers, each of said silver halide emulsion layers containing at least one non-diffusing color coupler capable of forming a dye through the reaction with the oxidation product of an aromatic primary amino color developing agent, and each of said silver halide emulsion layers being spectrally sensitized to substantially the same region of the spectrum selected from the group consisting of blue and green, blue and red, and blue, green and red, wherein each of said silver halide emulsion layers has a different speed and a different silver halide-coupler molar ratio.

3,695,883
IMAGEWISE EXPOSED GELATINO SILVER HALIDE EMULSION TREATED WITH PYRUVIC ALDEHYDE HARDENER
Nobuo Yamamoto, Tadao Hatano, Isao Shimamura, and Haruhiko Iwano, all of 210 Nakanuma, Minami Ashigara-machi, Ashigara-Kamigun, Kanagawa, Japan
No Drawing. Filed Aug. 27, 1970, Ser. No. 67,620
Claims priority, application Japan, Aug. 27, 1969, 44/67,798
Int. Cl. G03c *5/26, 5/30*
U.S. Cl. 96—50 **11 Claims**

A process for the hardening treatment of a silver halide photographic material comprising treating the silver halide photographic material with pyruvic aldehyde during a photographic processing step is disclosed.

3,695,884
PHOTOGRAPHIC FLUID CONTAINER MANUFACTURED BY FREEZING AND SEALING LIQUID
Edwin Land, Cambridge, Mass., assignor to Polaroid Corporation, Cambridge, Mass.
Filed June 18, 1970, Ser. No. 47,452
Int. Cl. G03c *1/48*
U.S. Cl. 96—76 C **18 Claims**

The rupturable container of viscous processing liquid of a self-developing photographic film assemblage is formed and filled with an accurately predetermined quantity of the liquid by freezing the liquid to form a solidified body, forming and sealing the walls of the container around the solidified body and then thawing the solid body to return it to a viscous, liquid state. A method of assembling a film unit is described in which a wall of the container comprises a portion of another component of the film unit.

3,695,885
HEAT DEVELOPABLE DIAZOTYPE COPYING MATERIAL
Shoji Maryama, 4100 Isobe, Sagamihara-shi, Japan; Tadashi Saito, 30 Kitamigata, Kawasaki-shi, Japan; and Tomiaki Asami, 280 Hiyoshi-cho, Kohoku-ku, Yokohama-shi, Japan
No Drawing. Filed June 5, 1970, Ser. No. 43,968
Claims priority, application Japan, June 7, 1969, 44/17,475; Feb. 28, 1970, 45/44,745
Int. Cl. G03c *1/54, 1/58, 1/60*
U.S. Cl. 96—91 R **27 Claims**

A heat developable diazotype copying material comprising a support and a light-sensitive layer formed onto one surface of said support, said layer containing a coupler which activated during the heat development of the copying material and at least two kinds of diazonium compounds forming a black azo dye as a result of a reaction between said coupler and said diazonium compounds.

3,695,886
HIGH SPEED AZIDE RESISTS
Nicholas J. Clecak, San Jose, and Robert J. Cox, Los Gatos, Calif., and Wayne M. Moreau, Wappingers Falls, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Sept. 29, 1970, Ser. No. 76,398
Int. Cl. G03c *1/52*
U.S. Cl. 96—91 N **10 Claims**

Light sensitive photoresist compositions particularly useful for projection exposure applications include a photocrosslinkable polymer and novel sensitizers which are bis-p-azido cinnamylidene derivatives of cyclic and linear ketones.

3,695,887
PHOTOIMAGING MATERIAL COMPRISING POLYAMIDE
Viron V. Jones, Caldwell, N.J., assignor to Keuffel & Esser Company, Morristown, N.J.
No Drawing. Filed July 8, 1970, Ser. No. 53,276
Int. Cl. G03c *1/70*
U.S. Cl. 96—115 R **5 Claims**

Alkoxy methylated polyamide resin layers are imagewise insolubilized by exposure to light in the presence of halogenated organic photoinitiator compounds. The compositions are greatly improved in light sensitivity by the addition of dyes, and exposed layers are developable by selective dissolution in unexposed areas with aqueous developer solutions to form direct images, resists, or reprographic masters.

3,695,888
PHOTOGRAPHIC SUPERSENSITIZED SILVER HALIDE EMULSIONS
Gary L. Hiller, Hilton, Cynthia G. Ulbing, Fairport, and John E. Starr, Webster, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
No Drawing. Continuation-in-part of application Ser. No. 860,394, Sept. 23, 1969. This application May 28, 1970, Ser. No. 41,569
Int. Cl. G03c *1/10*
U.S. Cl. 96—123 **10 Claims**

Light-sensitive photographic silver halide emulsions are spectrally sensitized with a tricarbocyanine dye in which

the meso carbon atom of the methine linkage of the dye is attached to the nitrogen atom of an amino group which forms an enamine with the methine linkage of the dye; said emulsion containing, as supersensitizer, a sulfonated polynuclear aromatic organic compound, a silver halide reducing agent, an azaindene or a combination of such supersensitizers.

3,695,889
EMULSIFIER SYSTEM FOR SUBSTITUTE DAIRY PRODUCTS
Philip F. Ingerson, Merced, Calif., assignor to Avoset Food Corporation, Oakland, Calif.
No Drawing. Filed June 5, 1970, Ser. No. 43,966
Int. Cl. A23c *11/00*
U.S. Cl. 99—63 **8 Claims**

An emulsifier system useful in non-whipping type substitute food and dairy products which contain a higher ratio of polyunsaturated fats to saturates. The system comprises in combination polysorbate 60, propylene glycol monostearate, and a fatty acid lactylate alkali metal salt.

3,695,890
COLLAGEN PULP BEVERAGE TEXTURIZER
Albert T. Miller, Somerville, N.J., assignor to Devro, Inc.
No Drawing. Filed Nov. 2, 1970, Ser. No. 86,369
Int. Cl. A23l *1/00*
U.S. Cl. 99—78 **17 Claims**

Synthetic juice pulp is formed from pulp-sized discrete flake-like particles of an edible, cold water insoluble, acid-swellable, regenerated collagen. The synthetic pulp consists of particles of regenerated collagen which differ in their swelling characteristics according to their size or amount of curing or tanning. The synthetic pulp is incorporated into dry beverage powders, beverage concentrates, or into the aqueous beverage itself.

3,695,891
METHOD OF TREATING SOYBEANS
Wayne F. Fox, Des Moines, Iowa, assignor to Triple F, Inc., Des Moines, Iowa
Filed Apr. 6, 1970, Ser. No. 25,948
Int. Cl. A23l *1/20*
U.S. Cl. 99—98 **2 Claims**

Treating raw, untreated whole soybeans to remove the heat labile growth inhibitors and beany bitterness without destroying amino acids by introducing into an extruder at ambient temperature and augering under progressively increasing pressures so that resultant friction and pressure alone develop a cooking heat in the beans of at least 240° F. The cooked material is expelled from the die head of the extruder and into the atmosphere. The initial moisture of the raw bean having entrained therein the heat labile growth inhibitors are released into the atmosphere so that the resultant product, which consists of loose agglomerates, may be fed directly to humans, livestock and poultry upon cooling.

3,695,892
METHOD OF PRODUCING AN IMPROVED FLAVORED POULTRY PRODUCT
William C. Reinke, University City, Mo., assignor to Ralston Purina Company, St. Louis, Mo.
No Drawing. Filed Apr. 21, 1970, Ser. No. 30,584
Int. Cl. A22c *21/00*
U.S. Cl. 99—107 **5 Claims**

An improved flavored poultry product, such as turkey, and process for producing same is disclosed. Parts such as necks, backs, and deboned carcasses are cooked in water to obtain a broth, such as turkey broth. The substantially clear liquid portion of the broth is then separated from the fat, mixed with other flavoring materials, and injected into the carcass of the whole birds.

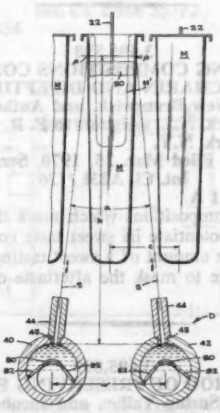
3,695,893
METHOD AND APPARATUS FOR PROCESSING CURD IN THE MANUFACTURE OF CHEESE
Joseph Czulak, Greenslopes Nepean Highway, Mount Eliza, Victoria, Australia; Norman H. Freeman, 475 Moreland Road Moorabbin, Victoria, Australia; and James R. O'Connell, 3 Porter Road, Pascoe Vale South, Victoria, Australia
Filed Jan. 29, 1970, Ser. No. 6,915
Claims priority, application Australia, Feb. 5, 1969, 50,076/69
Int. Cl. A23c *19/02*
U.S. Cl. 99—116 **10 Claims**

Apparatus and method for processing cheese curd and whey in manufacture of cheddar cheese by passing curds and whey over a screen to drain off the bulk of the whey, feeding the separated curd to a conveyor so that it forms a layer thereon and stirring the layer to facilitate further drainage of whey, cutting blocks from the layer and compressing the blocks in respective containers each of which is large enough to permit its block to flow under compression to produce fibre development of the curd.

3,695,894
METHOD OF GLAZING HARD CANDY COATINGS
Allen S. Hum, Minneapolis, Minn., assignor to General Mills, Inc.
No Drawing. Filed May 27, 1970, Ser. No. 41,097
Int. Cl. A23g *3/00*
U.S. Cl. 99—134 R **3 Claims**

Glazing hard candy coatings by means of infrared heat and exposure.

3,695,895
MOLDING MACHINE WITH SPRAY DEFROST
John S. Brown, Sacramento, Calif., assignor to FMC Corporation, San Jose, Calif.
Filed Oct. 29, 1970, Ser. No. 85,004
Int. Cl. F25c *7/04*
U.S. Cl. 99—136 **11 Claims**



In a frozen food molding machine, molds are lifted from an immersion freezing tank and advanced to a position above parallel headers which straddle the molds. Streams of heated water are continuously converged against the

pre-wetted sides of said molds by nozzles projecting up from the headers. The angularity of nozzle convergence is adjustable, and baffles extend inside the nozzle headers.

3,695,896
PRESERVATION OF VOLATILE FOODSTUFF FLAVOURS

Hiroshi Sugisawa, Summerland, British Columbia, Canada, assignor to Canadian Patents and Development Limited, Ottawa, Ontario, Canada

No Drawing. Filed Jan. 21, 1970, Ser. No. 4,776
Int. Cl. A23l *1/22*
U.S. Cl. 99—140 R **38 Claims**

The invention is concerned with the preservation of volatile flavours and aromas in a stable, dry form. A sugars-containing mixture comprising at least 50% sucrose is heated to a temperature and for a period of time sufficient to cause formation of oligo-saccharide sugar polymers. The resultant base is cooled, and the desired flavour and aroma essences together with a binding agent are blended therewith. The final product having the flavour and aroma essences entrapped with the sugar polymers is dried to give a stable, dry food product.

3,695,897
METHOD OF SEPARATING AND COLLECTING FLAVOR COMPONENTS CONTAINED IN FOODS

Kinji Uchida and Koya Mogi, both of 101 Myazaki, Noda, Japan, and Tamotsu Yokotsuka, 1–134 Edogawadai, Nagareyama, Japan

No Drawing. Filed Sept. 1, 1970, Ser. No. 68,787
Claims priority, application Japan, Sept. 1, 1969, 44/68,625
Int. Cl. A23l *1/22*
U.S. Cl. 99—140 R **9 Claims**

A method of separating and collecting food flavor components which comprises contacting liquid paraffin with a volatile food flavor components-containing starting material selected from the group consisting of gaseous and liquid materials to effect the absorption by said liquid paraffin of said flavor component, submitting the liquid paraffin, which has thus absorbed the flavor components, to ethanol vapor distillation under reduced pressure, and thereafter collecting the flavor components-containing ethanol that distills off.

3,695,898
SWEETENING COMPOSITIONS CONTAINING SACCHARIN AND DIPEPTIDES

John A. Hill, New Brunswick, and Anthony L. La Via, East Brunswick, N.J., assignors to E. R. Squibb & Sons, Inc., New York, N.Y.

No Drawing. Filed Mar. 25, 1970, Ser. No. 22,686
Int. Cl. A23l *1/26*
U.S. Cl. 99—141 A **13 Claims**

Sweetening compositions which mask the aftertaste of saccharin and potentiate its sweet taste contain saccharin together with an amount of a sweet tasting dipeptide in a quantity effective to mask the aftertaste of saccharin.

3,695,899
METHOD OF PRESERVING FOOD

Chi-Hang Lee, Spring Valley, and Jacob Richard Feldman, New City, N.Y., assignors to General Foods Corporation, White Plains, N.Y.

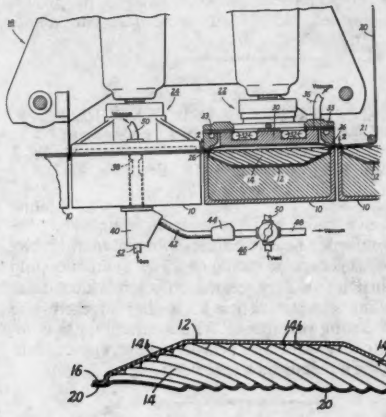
No Drawing. Filed May 18, 1970, Ser. No. 38,593
Int. Cl. A23l *3/00, 7/00*
U.S. Cl. 99—150 **4 Claims**

Food spoilage caused by the undesirable growth of microorganisms can be prevented by adding small amounts of thioisomaltol or hydrolyzable derivatives of thioisomaltol to the food.

3,695,900
EVACUATED HERMETICALLY SEALED PACKAGE WITH SEMIRIGID SHELL AND STRETCHABLE CLOSURE

William E. Young, Stamford, Conn., and Reid A. Mahaffy, Montclair, N.J., assignors to Reid A. Mahaffy, John R. Harder, and American Can Company, fractional part interest to each

Continuation of application Ser. No. 484,249, Sept. 1, 1965. This application July 22, 1970, Ser. No. 64,034
Int. Cl. B65b *25/06, 31/02*
U.S. Cl. 99—174 **19 Claims**



Evacuated hermetically sealed package comprising a top of stretchable plastic film sealed to a semi-rigid shell containing a product with the stretchable top in tight contact with the upper surface of the product. The package is formed by apparatus including a packaging head having preliminary and final sealing means. The preliminary sealing means include heat seal bars extending part way around the periphery of the shell and a heating element mounted within the space interiorly of the seal bars which softens the top and renders it readily stretchable in the area inboard of the seal line. Final seal means including an evacuating chamber and means to complete the seal between the top and shell. The application of atmospheric pressure upon venting the evacuation chamber causes the top to stretch inwardly against the product.

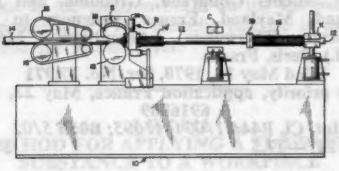
3,695,901
COHERENT STICK OF SHIRRED TUBING

Louis L. Winokur, 741 Brummel St., Evanston, Ill. 60202

Filed May 7, 1970, Ser. No. 35,443
Int. Cl. A22c *13/00*
U.S. Cl. 99—176 **8 Claims**

A shirred stick of flexible tubing having a straight bore and an ordered pattern of shirred pleats has an improved coherency and is provided with one or more longitudinal grooves formed and extending on its outer surface from one end of the stick to the other. The grooves are formed

by passing the shirred tubing through a restraining device comprising one or more blades disposed about a shirring



mandrel to engage and longitudinally indent the outer surface of the shirred tubing.

3,695,902

EDIBLE FILMS AND CASINGS OF COLLAGEN AND CASEIN

Joseph L. Shank, 4110 206th St., Matteson, Ill. 60443

No Drawing. Application Sept. 18, 1969, Ser. No. 859,480, now Patent No. 3,533,817, dated Oct. 13, 1970, which is a continuation of application Ser. No. 570,758, Aug. 8, 1966. Divided and this application May 28, 1970, Ser. No. 41,615

Int. Cl. A22c *13/00*

U.S. Cl. 99—176 9 Claims

A method of preparing continuous edible films from mixtures containing collagen and casein which are pressure sealable and formable into tubes or casings is disclosed herein. A flowable paste of about one part collagen to from about 0.2 to 4 parts casein is treated with a material selected from the group consisting of a plasticizing agent and a lubricating material. The resulting flowable paste is cast to a form a continuous film and then dried. The dried film may be further processed by sealing the edge of the film to form a tube or casing and then treating the tube with a good grade cross-linking agent.

3,695,903

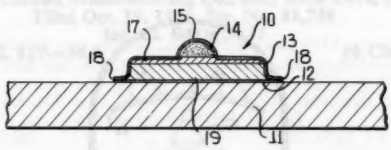
TIME/TEMPERATURE INDICATORS

Maria Telkes, Washington, D.C., and Henry Hahn, Fairfax, Va., assignors to American Standard Inc., Falls Church, Va.

Filed May 4, 1970, Ser. No. 34,262

Int. Cl. G01k *1/02, 3/00, 11/00*

U.S. Cl. 99—192 TT 14 Claims



A device for detection and indication of thawing of a frozen object. The device is attached to the frozen food and includes an indicator and a sensor which undergoes color change upon thawing to a preselected temperature below 100° F. In particular, a small transparent container of sensing material, comprising an organic gel exhibiting syneresis, in combination with an inorganic salt hydrate, is converted to the frozen state in proximity to a pH indicator, and the entire combination attached to the frozen food package or other frozen object. When the package or other object is exposed for a predetermined time to temperatures above that at which the sensing material melts, the latter becomes liquid and reacts with the pH indicator to produce a color change therein which is readily visible through the transparent container. Refreezing has no effect on the color change.

3,695,904

METHOD OF IMPROVING COLORING AGENT CROCKING FASTNESS OF POLYMERIC ALCOHOL FILMS

Harold R. Coleman, Danville, Ill., assignor to Tee-Pak, Inc., Chicago, Ill.

No Drawing. Continuation-in-part of application Ser. No. 697,592, Jan. 15, 1968. This application June 8, 1970, Ser. No. 44,556

The portion of the term of the patent subsequent to Nov. 10, 1987, has been disclaimed

Int. Cl. A22c *13/00*; C08j *1/38*

U.S. Cl. 99—176 20 Claims

The overcoating of a colored polymeric alcohol film substrate, such as a cellulosic sausage casing, while in the gel state, with a coating solution containing a water-soluble polymer having at least two reactive functional groups therein (e.g. gelatin, gum arabic, gum tragacanth, or egg albumin) and a difunctional or polyfunctional cross-linking agent (e.g. diisocyanates or polyepoxides, etc.), followed by heating and drying the coating to insolubilize the same, improves the coloring agent crocking fastness and the adhesion of printing ink subsequently applied thereto. The polymer and cross-linking agent in the solution must be compatible, i.e. not reactive with water or with each other at ambient temperatures. A similar effect can be obtained by first coating the gel polymeric alcohol film substrate with an aqueous solution of the water-soluble polymer and insolubilizing the coating by treatment with a cross-linking agent in a separate step.

3,695,905

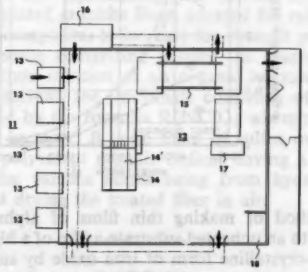
APPARATUS FOR PRODUCTION OF CASTELLA OR SOFT CAKE

Kanehiro Hirakawa, 2–10 Fujigaya 2-chome, Kugenuma Fujisawa-shi, Kanagawa-ken, Japan

Original application Apr. 22, 1970, Ser. No. 30,820. Divided and this application July 26, 1971, Ser. No. 166,000

Int. Cl. B65b *55/12*

U.S. Cl. 99—356 4 Claims



In producing castella or soft cake, it is baked in an oven positioned between an operation room and a sterilization room which is sealed from the surrounding atmosphere. After removal from the oven into the sterilization room, the castella is first cut to size, its surface is rapidly dried, and finally the castella is packed and hermetically sealed in synthetic resin containers.

3,695,906

CONCRETE HARDENING METHOD AND COMPOSITION

Ray F. McCune, 1710 Alta Vista Drive, Alhambra, Calif. 91803, and Richard C. Porter, 310 S. 3rd E., Preston, Idaho 83263

No Drawing. Filed May 28, 1971, Ser. No. 148,215
Int. Cl. C09k *3/100*
U.S. Cl. 106—12 3 Claims

Uncured cement-containing material is treated by the method:

(a) preparing a dilute aqueous solution containing sodium silicate, an alkali fluoride, and hydrofluoric acid, and

(b) applying said solution to the surface of said uncured material,

(c) the amounts of said silicate, alkali fluoride and hydrofluoric acid being such that hardening of the material during curing is enhanced.

3,695,907

PROCESS OF PREPARING TITANIUM PIGMENT OF IMPROVED RESISTANCE TO PHOTO-REDUCTION

Monroe M. Solomka and Gabriel Puente Fernandez, Bilbao, Spain, assignors to Dow-Unquinesa S.A., Bilbao, Spain

No Drawing. Filed Nov. 19, 1970, Ser. No. 91,198
Claims priority, application Spain, Nov. 22, 1969, 373,808
Int. Cl. C09c *1/36*
U.S. Cl. 106—300 23 Claims

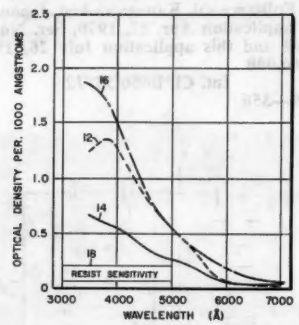
Titanium dioxide pigments of improved resistance to photo-reduction are produced by incorporating with the pigment at least about 0.05% by weight of a metal halate or perhalate.

3,695,908

THIN FILMS OF ALPHA FE_2O_3 AND METHOD OF FORMING

Raymond E. Szupillo, 266 Orchard Drive, Big Flats, N.Y. 14814

Filed June 29, 1970, Ser. No. 50,669
Int. Cl. B44c *1/22*
U.S. Cl. 117—8 10 Claims



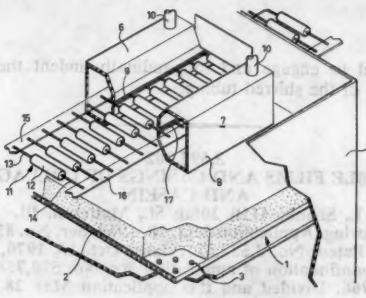
A method of making thin films of alpha Fe_2O_3 by applying to an unheated substrate a film of a highly permeable non-crystalline form of iron oxide by subjecting the substrate to vapor produced by evaporating a source of iron oxide at a pressure less than 10^{-4} torr and thereafter heating the deposited film in an oxidizing atmosphere at a temperature of at least 425° C. for a period of time sufficient to convert it to a stable, crystalline film of hematite, alpha Fe_2O_3. A film of hematite so formed having a thickness in the range of 1000 A.–3600 A. on a substrate of transparent, alkali-free glass may be patterned to form a microcircuit mask having increased transmission in the visible portion of the spectrum.

3,695,909

METHOD FOR ELECTROSTATIC COATING OF OBJECTS WITH A POWDER COATING MATERIAL

Pierre Fabre, Grenoble, Robert Giroud-Garampon, Vourey, Michel Gondrand, Grenoble, and Fernand Raymond, Meyland, France, assignors to Tunzini Ameliorair Thermique, Aeraulique, Mecanique (T.A.M.), Paris, France

Filed May 18, 1970, Ser. No. 37,971
Claims priority, application France, May 23, 1969, 6916009
Int. Cl. B44d *1/094, 1/095;* B05b *5/02*
U.S. Cl. 117—17.5 5 Claims



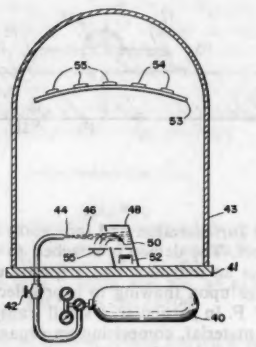
The present invention relates to a method and apparatus for the partial surface coating of objects, such as electrical components, moving past an electrostatic coating station where they are coated with electrified particles of coating material. According to the invention the portion or portions of the components which are not to be coated, e.g. the connecting wires of electrical components, are maintained in a zone of pneumatic overpressure during their passage through the coating station, whereby such portions do not become coated.

3,695,910

METHOD OF APPLYING A MULTILAYER ANTI-REFLECTION COATING TO A SUBSTRATE

Anthony W. Louderback, 286 Corona Ave., Long Beach, Calif. 90803, and Morris A. Zook, Jr., 814 E. Mooney Drive, Monterey Park, Calif. 91754

Original application Jan. 21, 1969, Ser. No. 792,543, now Patent No. 3,604,784, dated Sept. 14, 1971. Divided and this application May 28, 1970, Ser. No. 50,010
Int. Cl. B29d *11/00;* B44d *5/06*
U.S. Cl. 117—33.3 8 Claims



A method for vacuum depositing antireflection layers on a substrate using an electron beam is disclosed. All

coating materials are placed in the vacuum chamber. A metallic oxide is evaporated onto the substrate as a first layer. A mixture of at least two oxides is evaporated onto the first layer and oxygen is directed from an oxygen source to the electron beam during the evaporation of the second layer. The metallic fluoride is then evaporated onto the second layer.

3,695,911

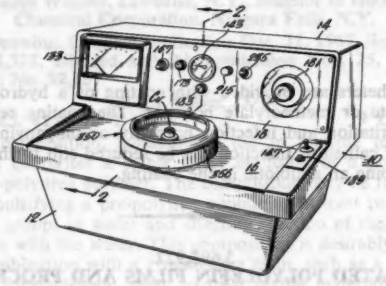
METHOD FOR APPLYING A FLOWABLE SUBSTANCE TO A WORKPIECE

Jerry Polin, Melrose Park, Pa., assignor to Alco Standard Corporation, Cleveland, Ohio

Original application Dec. 12, 1967, Ser. No. 690,012. Divided and this application Nov. 9, 1970, Ser. No. 87,871

Int. Cl. B44d *1/02*

U.S. Cl. 117—34 **4 Claims**



A method for coating a surface of a workpiece with a flowable substance comprising the steps of depositing a quantity of the substance on a surface of the workpiece while the workpiece is at rest, rapidly rotating the workpiece at a high rate of acceleration of as high as 1,000 r.p.m. per ms. whereby the substance is dispersed over the surface of the workpiece to form a layer thereon of predetermined thickness and uniform throughout.

3,695,912

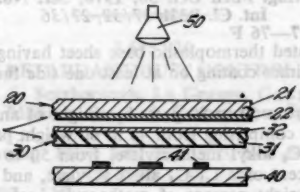
THERMAL COPYING METHOD AND PRODUCTS

Peter De Laurentis, Massapequa, and Douglas A. Newman, Glen Cove, N.Y., assignors to Columbia Ribbon and Carbon Manufacturing Co., Inc., Glen Cove, N.Y.

Filed Oct. 19, 1970, Ser. No. 81,730

Int. Cl. B41m *5/22*

U.S. Cl. 117—36.2 **10 Claims**



Heat-sensitive color-forming projection transparency assemblies for the production of stable colored transparency copies of an imaged original by means of infrared radiation. The assemblies comprise a transfer sheet carrying a heat-transferable aromatic acid and a plastic film receptor sheet coated with an acid-sensitive dye precursor in a resinous binder system comprising a mixture of a minor amount of a vinylidene chloride polymer and a major amount of a second polymer which is compatible therewith.

3,695,913

Patent Not Issued For This Number

3,695,914

Patent Not Issued For This Number

3,695,915

PROCESS FOR IMPROVING THE ADHESION OF POLYOLEFIN SURFACES

Carolyn Ethel Mary Morris, Runcorn, England, assignor to Imperial Chemical Industries Limited, London, England

Filed June 23, 1970, Ser. No. 49,116

Claims priority, application Great Britain, July 8, 1969, 34,417/69; Nov. 6, 1969, 54,430/69; Apr. 3, 1970, 15,962/70

Int. Cl. B44d *1/092, 1/24*

U.S. Cl. 117—47 A **16 Claims**

A process of modifying a polyolefin surface to improve the strength of the bond which may be obtained between it and another surface, which may or may not be a polyolefin, which comprises contacting said surface with an aqueous solution which contains peroxydisulphuric acid or a salt of said acid, preferably present in a concentration of between 1% and 25% by weight, and optionally, in the case where the polyolefin is polyethylene or poly(4-methyl pentene-1), in which the aqueous solution also contains at least one metal salt capable of activating peroxydisulphate oxidations.

3,695,916

PROCESS FOR REGENERATING SURFACE ACTIVITY IN OXIDATIVELY TREATED GRAPHITE FIBERS

Roscoe A. Pike, Simsbury, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

No Drawing. Filed July 8, 1970, Ser. No. 53,273

Int. Cl. B44d *1/092;* C01c *31/07*

U.S. Cl. 117—47 R **3 Claims**

A process for regenerating the surface activity in oxidatively treated graphite fibers adapted for reinforcing resin matrix composites to increase the strength properties of the composite comprising passing the graphite fiber through a dilute solution of an organic isocyanate in a low boiling solvent, the isocyanate consisting of a compound defined by the formula $R(NCB)_x$ wherein x is an integer of 1 or more, B is an atom of sulfur or oxygen and R is a polyvalent organic radical having a valence of x with the valence bonds being from hydrocarbon moieties, and drying the treated fiber in air.

3,695,917

PLATABLE POLYPROPYLENE

Ismat A. Abu-Isa, Birmingham, Mich., assignor to General Motors Corporation, Detroit, Mich.

No Drawing. Filed Aug. 21, 1970, Ser. No. 66,127

Int. Cl. B44d *1/092;* C23c *3/02*

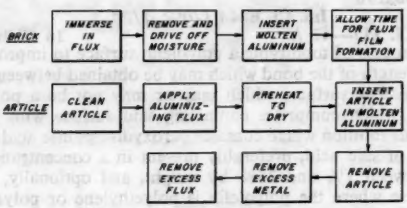
U.S. Cl. 117—47 A **3 Claims**

A process for plating polypropylene including the step of introducing about 2 to about 15% methyl abietate into the polymer.

3,695,918
HEAT SEALABLE FILM AND PROCESS FOR MAKING SAME
Peter Manners Ward, Wheathampstead, England, assignor to Imperial Chemical Industries Limited, London, England
No Drawing. Filed Sept. 14, 1970, Ser. No. 72,206
Claims priority, application Great Britain, Oct. 2, 1969, 48,460/69
Int. Cl. B32b *27/40;* C09j *7/00*
U.S. Cl. 117—47 A 14 Claims

Using resins containing an isocyanate ended polyurethane of average molecular weight more than 1000 and an organic polyisocyanate containing isocyanurate rings and having an average of more than two isocyanate groups per molecule as an intermediate adhesive coat between a thermoplastic film and a coating of a heat sealable material.

3,695,919
METAL COATING PROCESS
Kenneth J. Brondyke, Oakmont, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.
Filed Nov. 20, 1970, Ser. No. 91,387
Int. Cl. B44d *1/34;* C23c *1/00*
U.S. Cl. 117—52 9 Claims



A process for aluminizing an article by immersion in a vessel containing a bath of molten aluminum. Providing at least one foraminous refractory brick impregnated with a flux material having a density less than the molten aluminum bath. Introducing the brick into the vessel in contact with the aluminum to initiate discharge of the flux from the refractory brick into the aluminum. Retaining the brick in the vessel for a sufficiently long period of time to establish a thin film of the flux on the surface of the molten aluminum. Subsequently introducing the article to be aluminized into the molten aluminum and retaining it therein for a period of time sufficient to coat the article with the molten aluminum. Thereafter removing the article at a sufficiently low rate of speed to cause flux pickup to provide a flux coating on the coated article and thereby minimizing oxide formation on the cooled part. The foraminous refractory brick is preferably thermally stable at the molten aluminum bath temperature and the flux preferably has a melting temperature not less than the temperature of the molten aluminum bath.

3,695,920
ESTHETIC WOOD PRODUCT
Robert E. Hill, Clayton, Mo., assignor to Koppers Company, Inc., Pittsburgh, Pa.
No Drawing. Filed Apr. 20, 1970, Ser. No. 30,349
Int. Cl. B44d *1/16*
U.S. Cl. 117—69 11 Claims

Method for the preparation of wood having long lasting esthetic value and resistance to wood destroying organisms comprising imparting color to non-preserved wood with an aqueous pigment composition prior to treatment with an organic preserving system and the resulting wood products.

3,695,921
METHOD OF COATING A CATHETER
Thomas H. Shepherd, Hopewell, and Francis E. Gould, Princeton, N.J., assignors to National Patent Development Corporation, New York, N.Y.
Division of application Ser. No. 752,221, Aug. 13, 1968, now Patent No. 3,566,874, and a continuation-in-part of applications Ser. No. 576,856, July 26, 1966, now Patent No. 3,520,949, Ser. No. 650,259, June 30, 1967, and Ser. No. 654,044, July 4, 1967. This application Sept. 9, 1970, Ser. No. 70,722
Int. Cl. A61m *25/00;* B44d *1/22*
U.S. Cl. 117—72 14 Claims

Catheters are provided with coating of a hydrophilic acrylate or methacrylate polymer. The coating reduces the irritation and infection normally accompanying the use of catheters. Infection can be reduced still further by absorbing an antibiotic in the coating.

3,695,922
COATED POLYOLEFIN FILMS AND PROCESS FOR PREPARING SAME
Kiyoshi Chujo, Tetsuo Ishihara, and Hiroshi Osawa, Saitama, Japan, assignors to Diacel Ltd., Osaka, Japan
No Drawing. Filed Apr. 14, 1970, Ser. No. 28,504
Claims priority, application Japan, Apr. 17, 1969, 44/29,854
Int. Cl. B32b *27/32;* B44d *1/14*
U.S. Cl. 117—76 F 21 Claims

A process for the production of a heat-sealable, gas and water-vapor impermeable polyolefinic film which comprises applying a coating or coatings being on at least one surface of the film, the coating or coatings composed essentially of a copolymer of vinylidene chloride and a graft copolymer of a chlorinated polypropylene with an aromatic vinyl monomer such as styrene.

3,695,923
COMPOSITE SHEET
Donald F. Thompson, Elburn, and George D. Quartermus, Woodridge, Ill., assignors to Standard Oil Company, Chicago, Ill.
No Drawing. Filed Oct. 30, 1970, Ser. No. 85,755
Int. Cl. B32b *27/32, 27/36*
U.S. Cl. 117—76 F 10 Claims

An oriented thermoplastic base sheet having:
(I) a primer coating on at least one side thereof comprising:
(A) from 50 to 80 parts by weight of an interpolymer comprising from 45 to 60 weight percent of a C_1–C_4 alkyl methacrylate, from 50 to 35 weight percent of a C_1–C_4 alkyl acrylate, and from 1 to 5 weight percent of methacrylic, acrylic, or itaconic acid; and
(B) from 50 to 20 parts by weight of either (1) an adduct of rosin and an alpha-beta unsaturated dicarboxylic acid having an acid number between about 115 and about 140 and a melting point between about 110° C. and about 180° C.; (2) par-

tial esters of said adduct and a polyhydric alcohol; or (3) combinations of said adduct and said partial esters; and

(C) either 0.5% to 15% (by weight of (B)) of paraffin wax, microcrystalline wax or a mixture of carnauba wax and stearic acid wherein the weight ratio of wax to acid is from 82:18 to 89:11; and

(II) a moisture-vapor and gas barrier coating providing heat-sealing properties applied to said primer comprising 100 parts vinylidene chloride polymer (including copolymers), between about 2% and about 3% clay, and between about 2% and about 3% of either (1) paraffin wax, (2) carnauba wax, or (3) microcrystalline hydrocarbon wax (clay and wax percentages based on vinylidene chloride polymer weight).

3,695,924

PROCESS FOR TEXTILE TREATMENT AND TREATED TEXTILE

George Wagner, Lewiston, N.Y., assignor to Hooker Chemical Corporation, Niagara Falls, N.Y.

No Drawing. Original application Dec. 21, 1967, Ser. No. 692,322. Divided and this application Nov. 25, 1970, Ser. No. 92,857

Int. Cl. D06m *15/00*

U.S. Cl. 117—76 T 9 Claims

A composition, suitable for use in treating textiles, which comprises a stable water emulsion of a polyurethane-polyurea polymer. The composition may be formed by emulsifying a pre-polymer containing at least two free NCO groups in water and effecting reaction of the NCO groups with the water. This composition is desirably used in combination with a crosslinking resin, such as a melamine formaldehyde resin, to treat textile materials, and particularly cellulosic textiles, to impart wash and wear and durable press characteristics thereto. The abrasion resistance of the treated textile material is found to be appreciably greater than that of similar materials treated only with the crosslinking resin.

3,695,925

PROCESS FOR FLAMEPROOFING TEXTILES

Edward D. Weil, Hastings-on-Hudson, N.Y., assignor to Stauffer Chemical Company, New York, N.Y.

No Drawing. Filed Mar. 27, 1970, Ser. No. 23,499

Int. Cl. B44d *1/50;* C09k *3/28*

U.S. Cl. 117—93.31 15 Claims

The present invention provides a process for flameproofing textiles which comprises passing a textile through an aqueous padding solution containing at least one vinylphosphonate monomer and at least one nitrogen containing derivative of acrylic or methacrylic acid, and curing said monomer and acrylic acid derivative on said textile, and thereby rendering the textile flame retardant.

3,695,926

FLAME RETARDANT DUST CONTROL FABRIC

Alexander A. Scarborough, La Grange, Ga., assignor to Deering Milliken Research Corporation, Spartanburg, S.C.

No Drawing. Filed Jan. 29, 1970, Ser. No. 6,972

Int. Cl. C09k *3/28, 3/22*

U.S. Cl. 117—136 7 Claims

Emulsifiable flame retarding compositions for preparing dust control fabrics are disclosed. The compositions comprise an oil having a flash point above about 150° C., a flame retarding organic phosphate ester and emulsifying agent. These compositions readily form aqueous emulsions from which the oil composition is exhausted onto dust control fabrics such as cloths and mops. Such treated dust control fabrics exhibit improved flame retardancy and dust collecting properties.

3,695,927

ELECTRODEPOSITION PROCESS FOR PRODUCING PERFORATED FOILS WITH RAISED PORTIONS AT THE EDGES OF THE HOLES

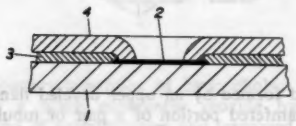
Bodo Futterer, Luzern, Switzerland, assignor to The Gillette Company, Boston, Mass.

Original application July 6, 1967, Ser. No. 651,548. Divided and this application July 7, 1970, Ser. No. 52,809

Claims priority, application Switzerland, July 6, 1966, 9,843/66

Int. Cl. C23b *7/08*

U.S. Cl. 117—212 2 Claims



A repairable master negative and a process for producing a master negative suitable for the production of a number of perforated foils and for regenerating such a master negative when it is worn, comprising applying insulating material to one surface of a metallic base plate that is stable in a bath of an alkali at selected areas thereof which conform with the perforations in the foils to be produced, applying a coating of a metal which is erodable in a bath of an alkali which is built up on the metallic base plate after the insulating areas have been applied to it, and passivating the metallic coating. When the master negative is worn due to the production of a number of perforated foils, it is repaired by stripping off electrolytically in a bath of an alkali the metallic coating and a new metallic coating is electrodeposited on the metallic base plate without disturbing the insulated areas.

3,695,928

SELECTIVE COATING

Lynn Forrest Boyer, Reading, and Anderson Forbes Johnson, Jr., Sinking Spring, Pa., assignors to Western Electric Company, Incorporated, New York, N.Y.

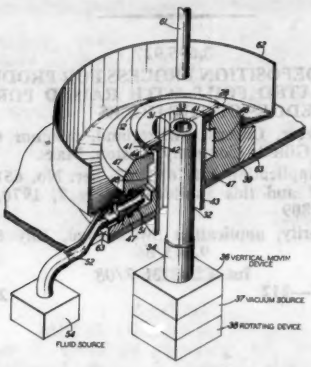
Filed Dec. 7, 1970, Ser. No. 95,821

Int. Cl. B44d *1/18, 1/52;* B05c *11/12*

U.S. Cl. 117—212 12 Claims

In making a diode array target for a television camera tube from a silicon substrate, the face of the substrate is flooded with a photoresist masking material and the substrate is then spun to form a uniform coating of the material on the face. Due to the overflowing, breaking down and scattering of the material on the substrate and due to leakage from a vacuum spindle holding the substrate, the material often creeps over, or splashes on, the backside of the substrate opposite the face. This results in a decrease in the uniformity of the diode array and requires an additional processing step to make the target. To prevent the material from creeping over, or splashing on, the backside and thereby reduce the processing steps and increase the uniformity of the diode array, a fluid is forced radially outward in an annular pattern from the center of the substrate and against the back-

side as it is spun. An apparatus for effecting this flow includes an annular nozzle positioned beneath the sub-



strate and formed by an upper beveled flange and a co-acting chamfered portion of a pair of tubular members.

3,695,929

CONDUCTORS INSULATED WITH A POLYMERIC AMIDE-IMIDE-ESTER AND AN AROMATIC POLYIMIDE OR AROMATIC POLYAMIDE-IMIDE OVERCOAT

Frank A. Sattler, Monroeville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Original application May 21, 1968, Ser. No. 730,833, now Patent No. 3,555,113. Divided and this application Aug. 5, 1970, Ser. No. 61,116

Int. Cl. B32b *15/08*; H01b *3/30*

U.S. Cl. 117—218 **20 Claims**

Polymeric amide-imide-ester wire enameling compositions are prepared from (1) a monoanhydride of an aromatic tricarboxylic acid, e.g. trimellitic anhydride, (2) an aromatic primary diamine compound and (3) either polyfunctional acids and polyhydroxy compounds or the polyesters thereof. At least a portion of the polyol or polyhydroxy compound is a tris (hydroxyalkyl) isocyanurate, e.g. tris (hydroxyethyl) isocyanurate. The polyfunctional acids (3) comprise an acid component selected from the group consisting of trimellitic anhydride, isophthalic acid and esters of isophthalic and terephthalic acid. The polymeric amide-imide-ester may be blended with terephthalate or isophthalate polyesters, polyisocyanates and other materials. One particularly suitable polyisocyanate is prepared from dimethylterephthalate, tris (2-hydroxyethyl) isocyanurate and tolylene diisocyanate. Small amounts of aliphatic amino compounds, aliphatic polyols and other flexibilizing materials may be incorporated into either the polymeric amide-imide-ester or the polyester blended therewith. A variety of block and modified block polymers may be made. Imidization occurs during the preparation of the polymeric amide-imide-ester so that the condensed water is removed before the fluid compositions are applied and cured.

3,695,930

Patent Not Issued For This Number

3,695,931

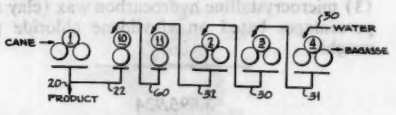
WET MILLING EXTRACTION PROCESS AND APPARATUS THEREFOR

Thomas M. Hamill, 343 Dune Circle, Kailua, Hawaii 96734

Filed Mar. 31, 1970, Ser. No. 24,139

Int. Cl. C13d *1/02, 1/04, 1/12*

U.S. Cl. 127—4 **31 Claims**



Milling process and apparatus, for extracting a liquid or a solid from a fibrous material having the liquid or solid entrapped therein. The fibrous material is macerated before each mill with an imbibition liquid which is capable of displacing the entrapped liquid or solid. The macerated fibre is then passed through a series of mills, some which exert high pressure causing expression of the juice and rupture of the fibre cells, and others which exert low pressure causing expression of the juice but without any substantial amount of cell rupture. The juice expressed by each mill with the exception of the product mill is collected and returned to be used as the imbibition liquid for the fibre at a prior mill in the train. This process has particular use in the sugar industry to remove sugar bearing liquid from cane.

3,695,932

SUCROSE NUCLEATION COMPOSITION AND METHOD OF PREPARATION

Alan D. Randolph and Rufus W. Crawford, Tucson, Ariz., assignors to The Battelle Development Corporation, Columbus, Ohio

Filed July 29, 1970, Ser. No. 59,233

Int. Cl. C13f *1/02*

U.S. Cl. 127—30 **16 Claims**

A sucrose nucleation composition for crystallizing sucrose comprises sucrose nuclei having at least 90% as single crystals, a crystal population density expressed as particles per cubic centimeter per micron of at least about 10,000 at a crystal size of ten microns, a population-weighted mean size of between about 10 and about 30 microns, and a total number concentration of at least about 100,000 particles per cubic centimeter. The nucleation composition may be produced in batch or continuously, but preferably continuously, by mixing a critical amount of low molecular weight polar organic compound, preferably ethanol and a sucrose feed syrup comprising a major amount of sucrose and water.

3,695,933

PROCFSS FOR THE PRODUCTION OF A DEFATTED STARCH CONVERSION PRODUCT

Irving F. Deaton, La Grange, Ill., assignor to CPC International Inc.

No Drawing. Filed Aug. 12, 1970, Ser. No. 63,263

Int. Cl. C13k *1/06*

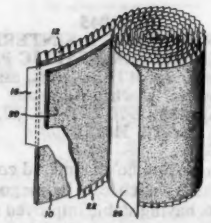
U.S. Cl. 127—32 **9 Claims**

Process for the production of a defatted starch conversion product which comprises heating a starch conversion liquor having a solids content of from about 10% to about 50% by weight and a D.E. of from about 1 to about 20 on a dry basis to a temperature of from about 212° F. to about 300° F.; defatting the heated liquor to a fat content below about 0.3% on a dry basis.

3,695,934
MAGNETIC CLEANING
James F. Feldhaus, Marine on the St. Croix, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Nov. 2, 1970, Ser. No. 86,158
Int. Cl. B08b *3/10*; B24c *1/08*
U.S. Cl. 134—1 10 Claims

Articles are cleaned by immersion in a moving magnetic fluid containing a cleaner, the movement being induced by an alternating gradient electro-magnetic field acting upon magnetic particles.

3,695,935
BATTERY COIL CONSTRUCTION HAVING A RUFFLED EDGE ELECTRODE
George Phillip Cromer, Keystone Heights, Fla., assignor to General Electric Company
Filed Oct. 7, 1970, Ser. No. 78,807
Int. Cl. H01m *35/16*
U.S. Cl. 136—13 4 Claims



An improved cell construction is utilized in which a ruffled edge of the negative plate extends longitudinally beyond the edge of the positive plate at one end of the battery coil and a ruffled edge of the positive plate extends longitudinally beyond the edge of the negative plate at the opposite end of the battery coil. Terminal straps are attached to the extending ruffled edges of the respective plates.

3,695,936
MANUFACTURE OF GAS ELECTRODES FOR FUEL CELLS
Robert Chevet, Chilly-Mazarin, and Jacques Goualard, Fresnes, France, assignors to Compagnie Generale de Electricite, Paris, France
No Drawing. Filed Nov. 23, 1970, Ser. No. 92,239
Claims priority, application France, Nov. 21, 1969, 6940156
Int. Cl. H01m *13/04*
U.S. Cl. 136—122 10 Claims

A process for the manufacture of a gas combustion-assisting electrode for fuel cells, said electrode comprising a porous active conductive layer catalytically deposited upon a conductive support through which a liquid can be passed, said porous layer containing a water-repellent agent, which process comprises,

preparing a liquid suspension comprising a powder of the material intended to constitute the active layer, said water-repellent agent and a fibrous compound capable of being carbonized,

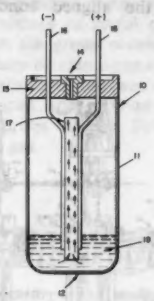
depositing said suspension onto said conductive support,

drying said suspension by applying a vacuum to said support and by heating,

compressing the resulting assembly under a pressure of about 10 kg./cm.^{2}, and

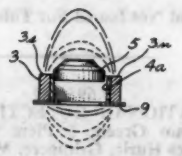
consolidating the resulting electrode by heating, whereby said fibrous compound is carbonized.

3,695,937
BATTERY SEPARATORS
John J. Rowlette, Arcadia, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.
Filed Mar. 9, 1970, Ser. No. 17,683
Int. Cl. H01m *3/02*
U.S. Cl. 136—146 8 Claims



Improved battery separator of hydrophobic synthetic fibers having a black manganese dioxide hydrophilic coating, method of prefabrication and improved batteries provided therewith.

3,695,938
MAGNETIC BATTERY MOUNTING
Richard A. Brodie, 180 S. Rosemead Blvd., Pasadena, Calif. 91107
Filed Oct. 19, 1970, Ser. No. 81,837
Int. Cl. H01m *1/04*
U.S. Cl. 136—173 5 Claims

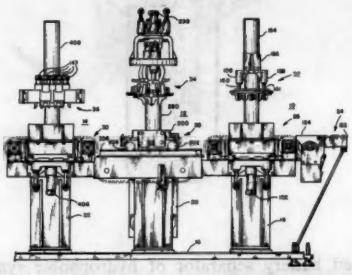


A magnetized ring particularly suitable for receiving a miniaturized battery therein, is mounted adjacent an electronic system such as a hearing aid in a manner so as to provide power thereto.

3,695,939
PROCESS AND MACHINE FOR MANUFACTURING ELECTRIC STORAGE BATTERIES
Richard A. Buttke, Anthony Sabatino, and Daniel Orlando, Milwaukee, and William H. Behrens, Racine, Wis., assignors to Globe-Union Inc., Milwaukee, Wis.
Original application Mar. 27, 1963, Ser. No. 268,359. Divided and this application Sept. 4, 1970, Ser. No. 69,749
Int. Cl. H01m *1/00*
U.S. Cl. 136—176 10 Claims

Batteries having cell element assemblies electrically connected by a welded joint between adjacent cell element assemblies are manufactured in an automated machine including align, weld, test, and reject stations and a conveyor for transporting a battery case containing cell element assemblies to the stations with the transportation of the battery case being synchronized with operations at the various stations. A battery case, containing

cell element assemblies, is transported to the align station wherein the cell element assemblies are aligned for welding. A test of the position of the cell element assemblies relative to each other and to the battery case and also of the electrical condition of the individual cell element assemblies is performed. The so aligned and tested battery cases are transported on the conveyor to the weld stations wherein the aligned conductive portions are



pressed into engagement and welded. Upon completion of the welding, the battery case is transported, again on the conveyor, to the test station wherein the connections between adjacent cell element assemblies are tested both electrically and mechanically. The tested battery cases are then transported, on the conveyor, to the reject station where they are rejected if prior testing shows them to have been defective or allowed to pass out of the machine if acceptable.

3,695,940

Patent Not Issued For This Number

3,695,941

PREPARATION OF EUTECTIC MATERIAL

Geoffrey William Green, 5 Piers Close, and Donald Thomas James Hurle, Grithacre, Marlbank Road, both of Malvern, England

Continuation-in-part of application Ser. No. 668,587, Sept. 18, 1967. This application May 4, 1970, Ser. No. 34,102

Claims priority, application Great Britain, Sept. 20, 1966, 41,836/66, Patent 1,192,736

Int. Cl. B01j *17/06*

U.S. Cl. 148—1.6 **8 Claims**

A method of preparing solid eutectic material by controlled solidification from the melt includes the application of a steady directional magnetic field to the liquid-solid interface in order to reduce banding perpendicular to the direction of growth. The method is applied when no external source of electric current is electrically connected to the material, and the solidification process may include pulling from the melt, zone melting or normal freezing.

3,695,942

ZIRCONIUM RINSE FOR PHOSPHATE COATED METAL SURFACES

Robert Eric Binns, Abington, Pa., assignor to Amchem Products, Inc., Ambler, Pa.

No Drawing. Filed Dec. 2, 1970, Ser. No. 94,531

Int. Cl. C23f *11/00*

U.S. Cl. 148—6.15 R **5 Claims**

A metal surface upon which a conversion coating has already been formed, is treated by contacting the surface with an aqueous solution consisting of a soluble zirconium containing compound, thereby improving the qualities of the conversion coating.

3,695,943

Patent Not Issued For This Number

3,695,944

IRON COBALT VANADIUM ALLOY

Carl P. Stroble, Natrona Heights, Pa., assignor to Allegheny Ludlum Industries, Inc., Pittsburgh, Pa.

No Drawing. Filed June 17, 1970, Ser. No. 47,126

Int. Cl. H01f *1/14*

U.S. Cl. 148—31.55 **2 Claims**

Described herein is a novel and improved alloy containing cobalt, iron and vanadium and controlled quantities of carbon.

3,695,945

METHOD OF PRODUCING A SINTERED COBALT-RARE EARTH INTERMETALLIC PRODUCT

Mark G. Benz, Burnt Hills, N.Y., assignor to General Electric Company

Filed Apr. 30, 1970, Ser. No. 33,224

Int. Cl. H01f *1/08*

U.S. Cl. 148—103 **12 Claims**

A process for preparing novel sintered cobalt-rare earth intermetallic products which can be magnetized to form permanent magnets having stable improved magnetic properties. A cobalt-rare earth metal alloy is formed having a composition which at sintering temperature falls outside the composition covered by the single Co_5R intermetallic phase on the rare earth richer side. The alloy contains a major amount of the Co_5R intermetallic phase and a second solid CoR phase which is richer in rare earth metal content than the Co_5R phase. The specific cobalt and rare earth metal content of the alloy is substantially the same as that desired in the sintered product. The alloy, in particulate form, is pressed into compacts and sintered to the desired density. The sintered product is comprised of a major amount of the Co_5R solid intermetallic phase and up to about 35 percent by weight of the product of the second solid CoR intermetallic phase which is richer in rare earth metal content than the Co_5R phase.

3,695,946

METHOD OF MANUFACTURING ORIENTED GRAIN MAGNETIC STEEL SHEETS

Jean Demeaux, Lozere, France, assignor to Compagnie des Ateliers et Forges de la Loire (St.-Chamond, Firminy, St.-Etienne, Jacob Holtzer), Paris, France

No Drawing. Continuation of abandoned application Ser. No. 823,526, May 9, 1969. This application Nov. 24, 1971, Ser. No. 202,008

Int. Cl. H01f *1/16;* **C21c** *7/02*

U.S. Cl. 148—111 **1 Claim**

Method of elaborating metal sheets for magnetic applications and more particularly sheets having a single or double grain orientation, which consists in elaborating a carbon steel having a very low sulfur content, i.e. less than .005% and preferably less than .003%, reheating this metal in a steelwork furnace and strongly oxidizing the metal in a controlled manner, while avoiding any resulfurization, recarburizing the steel in the ladle and in vacuum to obtain very low carbon contents, preferably less than .005% C, subsequently adding the necessary alloying elements, silicon and/or aluminium, homogenizing

this addition by stirring, casting into ingot moulds, preferably without ambient air contact, the extra-mild steel thus obtained, and finally rolling the resulting ingots to convert them into sheets having a single—or double grain structure orientation.

3,695,947
AQUEOUS EXPLOSIVE COMPRISING HIGHER AMINE, GELLING AGENT AND INORGANIC OXIDIZER SALT

Donald W. Edwards, Lehighton, Pa., assignor to Atlas Chemicals Industries, Inc., Wilmington, Del.

No Drawing. Filed Jan. 22, 1970, Ser. No. 5,093
Int. Cl. C06b *19/04*
U.S. Cl. 149—2 **11 Claims**

An explosive composition containing a surfactant, a gelling agent, an aqueous medium, and an oxidizer. The surfactant promotes the rapid gelation of the gelling agent so that the gelling process is complete before the components of the composition have segregated.

3,695,948
CAST EXPLOSIVE COMPOSITION CONTAINING THIOUREA

Willard F. Clark, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed May 22, 1970, Ser. No. 39,904
Int. Cl. C06b *19/00*
U.S. Cl. 149—2 **10 Claims**

An explosive composition which comprises thiourea and an inorganic oxidizing salt; more specifically the composition includes water to provide a composition which will set up into a stiff to hard mass within a predetermined period of time. The composition is waterproof and can be detonated at low temperatures.

3,695,949
BLACK SMOKE MARKER

Donald J. Freeman, Parsippany, N.J., Ambrose A. Fulkerson, Evansville, Ind., Kenneth J. Grall, Stevensville, Mich., and Samuel J. Pearson, Nashville, Tenn., assignors to the United States of America as represented by the Secretary of the Army

Filed Aug. 2, 1971, Ser. No. 168,047
Int. Cl. C06d *3/00*
U.S. Cl. 149—15 **9 Claims**

A black smoke marker pellet for projectiles comprises an igniter composition composed of boron powder, potassium nitrate and a binder superimposed directly on a novel black smoke composition consisting essentially of hexachlorocyclopentadiene dimer and/or hexachlorobenzene, a polycyclic aromatic hydrocarbon such as anthracene, a powdered metallic fuel such as magnesium and an inorganic oxidizer such as strontium nitrate.

3,695,950
AMINO-ALDEHYDE RESIN BLASTING COMPOSITION CONTAINING GASEOUS VOIDS

Willard F. Clark, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed May 15, 1970, Ser. No. 37,839
Int. Cl. C06b *1/00*; F42b *1/00*
U.S. Cl. 149—19 **16 Claims**

A blasting agent is provided which can be cast into pre-formed shapes and forms. The blasting agent comprises at least one particulate inorganic oxidizing salt bound together with an amino resin to form a cohesive mass which is explosive.

3,695,951
PYROTECHNIC COMPOSITION

Horace H. Helms, Jr., Silver Spring, and Alexander G. Rozner, Bethesda, Md., assignors to the United States of America as represented by the Secretary of the Navy

No Drawing. Filed June 25, 1970, Ser. No. 49,980
Int. Cl. C06d *1/02*
U.S. Cl. 149—19 **15 Claims**

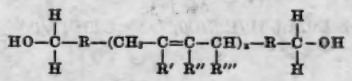
A pyrotechnic composition comprising (1) nickel, (2) a metal oxide or mixture of metal oxides, (3) a component selected from the group consisting of (a) aluminum and (b) a mixture of aluminum and a metal selected from the group consisting of magnesium, zirconium, bismuth, beryllium, boron and mixtures thereof provided that aluminum comprises at least 50% of said mixture and (4) a source of a gas.

3,695,952
SOLID PROPELLANT COMPOSITIONS CONTAINING HYDROXYMETHYL-TERMINATED POLYDIENES

Henry C. Allen, Decatur, Ala., assignor to the United States of America as represented by the Secretary of the Army

No Drawing. Filed Apr. 30, 1964, Ser. No. 364,890
Int. Cl. C06d *5/06*
U.S. Cl. 149—19 **8 Claims**

1. A solid composite propellant composition consisting essentially of a cured intimate admixture of at least one hydroxymethyl-terminated polydiene cured through the urethane linkage with at least one organic polyisocyanate curing agent; and at least one powdered inorganic oxidizing agent selected from the group consisting of inorganic chromates, inorganic permanganates, inorganic nitrates, inorganic chlorates, and inorganic perchlorates; said hydroxymethyl-terminated polydiene corresponding to the formula



wherein R′, R″, and R‴ are each selected from the group consisting of hydrogen, lower alkyl, lower alkoxy, halo, aryl, lower alkyl substituted aryl, lower alkoxy substituted aryl, halo substituted aryl, and aralkyl; R is selected from the group consisting of tetramethylene, pentamethylene, and hexamethylene; and x is a positive whole number greater than one such that the average molecular weight of said polydiene is from about 2,000 to about 10,000.

3,695,953
METHOD FOR THE PRODUCTION OF EXPLOSIVES

Sigfrid Rontsch, Schonebeck (Elbe), Germany, assignor to VEB Sprengstoffwerk Schonebock

Filed Mar. 9, 1970, Ser. No. 17,835
Int. Cl. C06b *1/04*
U.S. Cl. 149—56 **4 Claims**

Components of an explosive composition are mixed to form the explosive composition by charging the components into a first container having an open side facing upwards, sealing a second container over the first container, the second container being provided with mixing means, rotating the resultant assembly about 180° whereby the containers are inverted relative to each other and the contents of the first container fall into the second container, mixing the components together in the second container by operation of the mixing means, rotating the assembly again about 180° whereby the first container again assumes the bottom position and the mixed explosive composition falls from the second container into the first con-

tainer, disassembling the first container from the second container and transporting the first container away from the second container.

3,695,954

PROCESS FOR MANUFACTURING MICROWAVE CAPACITORS

Jean-Claude Resneau, Paris, France, assignor to Thomson-CSF

Filed Aug. 27, 1970, Ser. No. 67,334
Claims priority, application France, Sept. 30, 1969, 6933274
Int. Cl. H05k *3/06*
U.S. Cl. 156—3 **3 Claims**

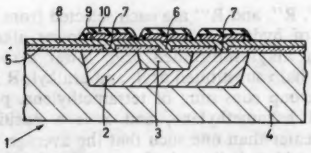
The present invention relates to a method of manufacturing UHF capacitors. Upon an annealed copper foil 1, there are produced by successive vaporisation, layers of chrome 4, silica, chrome 6 and copper 7. Then, by photographic techniques and electrolysis, gold is deposited to define the capacitor electrodes. The copper and the chrome of the ungilded parts are eliminated by chemical attack.

3,695,955

METHOD OF MANUFACTURING AN ELECTRIC DEVICE e.g. A SEMICONDUCTOR DEVICE

Pieter Johannes Wilhelmus Jochems and Reinier de Werdt, both of Emmasingel, Eindhoven, Netherlands

Filed Mar. 10, 1970, Ser. No. 18,197
Claims priority, application Netherlands, Mar. 14, 1969, 6903930
Int. Cl. H01l *7/00, 7/50;* C23f *17/00*
U.S. Cl. 156—11 **7 Claims**



The invention relates to a method of manufacturing an electric device, in which a substrate has to be provided by etching for example with a fine contact pattern in two layers consisting of a less noble metal and a nobler metal respectively. It has been found that presumably due to the formation of a galvanic element the less noble metal layer dissolves particularly rapidly. This can be prevented by covering the nobler metal layer and a strip of the less noble metal layer with an insulating layer prior to etching of the last-mentioned layer.

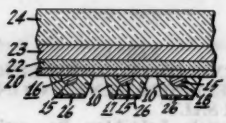
3,695,956

METHOD FOR FORMING ISOLATED SEMICONDUCTOR DEVICES

Robert Ray Speers, Trenton, N.J., assignor to RCA Corporation

Filed May 25, 1970, Ser. No. 40,038
Int. Cl. H01l *7/50;* H05k *3/06*
U.S. Cl. 156—11 **2 Claims**

An array of semiconductor devices is formed in a surface of a silicon wafer. A first protective layer of silicon nitride is deposited over the surface of the wafer, and a second protective layer of silicon is deposited on the first protective layer. A glass handle body is sealed to the second protective layer. A portion of the wafer between adjacent devices is etched away to isolate the



devices and a bond of glass is hot-pressed into the array of isolated devices. The handle body and the protective layers are then removed each with an etchant which does not attack the material there beneath.

3,695,957

Patent Not Issued For This Number

3,695,958

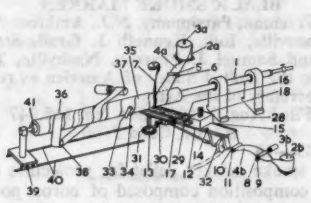
Patent Not Issued For This Number

3,695,959

METHOD OF MAKING SPIRAL WOUND PLASTIC FORM TUBE

Donald George Keith, Billingham, and Horst Egon Fred Ludwig Maack and Douglas Barrett Morris, Runcorn, England, assignors to Imperial Chemical Industries, Limited, London, England

Filed Feb. 16, 1970, Ser. No. 11,430
Claims priority, application Great Britain, Feb. 25, 1969, 9,957/69
Int. Cl. B32b *5/18*
U.S. Cl. 156—79 **11 Claims**

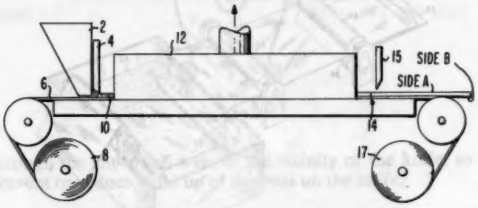


A method of forming spirally wound tube having at least one annular layer of foamed plastic which comprises (a) successively supplying tangentally to a mandrel and at an angle of less than 90° to the longitudinal axis thereof two or more plies at least one of which bears a coating of at least one fluid foamable plastic composition which may be in an at least partly expanded state, the order of succession and the manner of offering the plies to the mandrel being such that the foamable plastic composition lies between two plies on the mandrel, (b) rotation or lapping the plies round the mandrel to form ply windings thereon and simultaneously axially progressing the resultant ply windings along the mandrel whereby a spirally wound tube is formed, (c) causing or allowing the foam composition to complete its expansion and to set, and (d) supporting the spirally wound tube on the mandrel until the foam is sufficiently set for the tube to be self-supporting. Machinery for carrying out the method is also disclosed.

3,695,960
FABRICATING RELATIVELY THICK CERAMIC ARTICLES

Fred Eric Richter, Indianapolis, Ind., assignor to RCA Corporation

Filed Apr. 8, 1970, Ser. No. 26,758
Int. Cl. C04b *33/34*
U.S. Cl. 156—89 8 Claims



A relatively thick ceramic article is fabricated by casting a ribbon of slip upon a smooth surface; drying the slip to form a sheet of green ceramic; cutting the green ceramic sheet into pieces; positioning two of the pieces together so that those surfaces contact each other that formerly faced the smooth surface; passing the pair of pieces through the rolls of a calender to form a laminate; and firing the laminate to mature the ceramic.

3,695,961
METHOD OF PRODUCING AN IMPROVED INNER TUBE

Paul O. Pfeiffer, Cuyahoga Falls, and Frank J. Grucella, Akron, Ohio, assignors to The General Tire & Rubber Company

Original application Aug. 22, 1967, Ser. No. 662,362, now Patent No. 3,608,603, dated Sept. 28, 1971. Divided and this application Sept. 30, 1970, Ser. No. 76,889
Int. Cl. B29h *15/04*
U.S. Cl. 156—122 2 Claims

This invention relates to an improved inner tube for radial ply tires in which the ends of the tube, which are to be spliced together, lie at an acute angle with respect to the longitudinal axis of the tube.

3,695,962
METHOD OF MAKING PILE FABRICS

Lin-Luc J. S. Oosterlynck, Kuurne, Belgium, assignor to S.A. Cotexma N.V., Heirweg, Kuurne, Belgium

Filed Mar. 10, 1970, Ser. No. 18,271
Claims priority, application Great Britain, Mar. 10, 1969, 12,533/69
Int. Cl. B32b *31/14*
U.S. Cl. 156—148 12 Claims

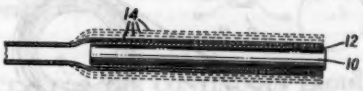
A method of producing a pile fabric by needling a structure comprised of a layer of fibrous material, a foundation layer and a strippable layer, bonding the needled fibers in the structure, and removing the strippable layer.

3,695,963
Patent Not Issued For This Number

3,695,964
SUPPORT FOR SEMIPERMEABLE MEMBRANE

Alfred Shaines, Fanwood, Robert L. Kalish, East Brunswick, and Edward A. G. Hamer, Metuchen, N.J., assignors to Abcor Water Management Company, Inc., Cambridge, Mass.

Application Oct. 28, 1968, Ser. No. 770,979, which is a continuation-in-part of application Ser. No. 508,307, Nov. 16, 1965. Divided and this application Jan. 16, 1970, Ser. No. 3,295
Int. Cl. B32b *31/12*; B29c *27/00*
U.S. Cl. 156—161 20 Claims

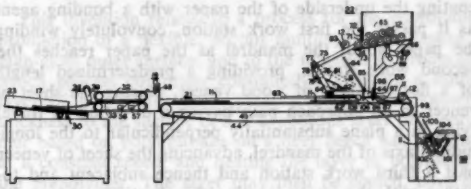


The invention provides a cylindrical rigid porous support for an osmotic or ultrafiltration membrane. The support is made of braided fiber sleeves, which are intimately conformed to a mandrel by axial lengthening and consequent radial shrinkage of the braided fibers around the mandrel and which are then permanently cemented together in such conformed position with a limited amount of cement to leave open interstices between the fiber crossover points.

3,695,965
METHOD FOR FEEDING AND WRAPPING SHEET MATERIAL

John Marvin Current, Jerry City, and Rodney Roger Smalley, Holland, Ohio, assignors to Johns-Manville Corporation, New York, N.Y.

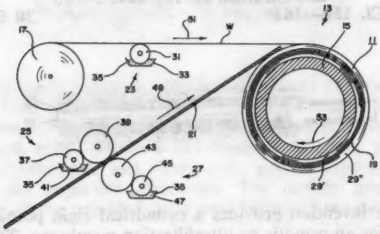
Filed Jan. 19, 1970, Ser. No. 3,598
Int. Cl. B65c *9/04*; B65h *81/00*
U.S. Cl. 156—187 19 Claims



Tubes of fibrous, thermal insulation are jacketed with sheet material by adhering the material to the tubes over a major portion of their surface while leaving an exposed longitudinal sector of the wall free of jacketing. The exposed sector is slit to enable the cylinders to be fitted on pipes. A tab extension of the jacket, free of the exposed sector and extending thereacross, enables the mounted tubes to be sealed by adhesive bonding of the tab across the slit. Precut sheets coated with a dormant and activatable adhesive are individually removed from a stack, conveyed across a region in which selected regions of the adhesive in the sheet are activated, conveyed across a reaction region and conveyed to a station in which

individual insulation tubes are rolled across each sheet to pick up the tackey surfaced portion thereof. Tubes wrapped with the sheet can be conveyed to a slitter which registers the exposed sector with the slitter blade and advances the sector into the blade longitudinally to sever one wall of the tube.

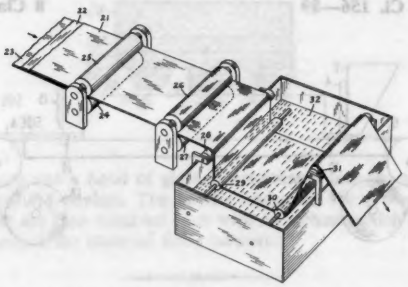
3,695,966
METHOD OF MANUFACTURING FURNITURE FABRICATION CORES
Frederick S. Kuhns, Memphis, Tenn., assignor to Southern Laminating Co., and Tri-State Veneer & Plywood Co., Memphis, Tenn., fractional part interest to each
Filed May 5, 1970, Ser. No. 34,836
Int. Cl. B65h *81/02*
U.S. Cl. 156—190 **8 Claims**



A method used to manufacture an elongated tubular core, having a wood veneer surface thereon, that can be used in fabricating a basic component for composite furniture or the like. The cores, each being tubular in cross section, are built in a variety of shapes for different intended uses, e.g., a transversely severed portion of a round or octangular tubular core might be made use of to form the vertical walls of a drum-type end table or a transversely severed portion of a rectangular core might be used to form the four sides of a television or stereo console cabinet. The method includes the utilization of at least one flexible sheet of wood veneer, a web of paper and a rotating mandrel and comprises providing the web of paper in roll form, placing the roll and the mandrel in a substantial parallel arrangement, yieldably unwinding the paper from the roll and advancing it past a first work station toward a second work station at the mandrel, coating the underside of the paper with a bonding agent as it passes the first work station, convolutely winding the paper about the mandrel as the paper reaches the second work station, providing a predetermined length of a flexible sheet of wood veneer, placing the sheet of veneer in an approach path having a direction of travel lying in a plane substantially perpendicular to the longitudinal axis of the mandrel, advancing the sheet of veneer past a third work station and thence subjacent and together with the paper, coating the sheet of veneer with a bonding agent as it passes the third work station and simultaneously interjecting the sheet of veneer between one circumferential winding and a succeeding winding of the paper at the second work station.

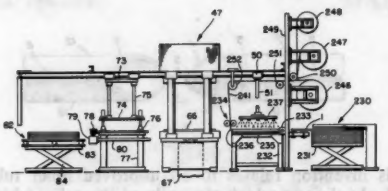
3,695,967
METHOD OF PREPARING AIR-PERMEABLE LAMINATE
Stanley E. Ross, Passaic, N.J., assignor to J. P. Stevens & Co., Inc., New York, N.Y.
Filed Dec. 16, 1970, Ser. No. 98,810
Int. Cl. B32b *3/10*
U.S. Cl. 156—209 **11 Claims**

An air-permeable laminated material is prepared by bonding one or more layers of fibrous material to a thermoplastic film. The bonding step is carried out by subjecting an assembly of the above components to pressure while heating at a temperature and for a period of time sufficient to perforate the thermoplastic film and simultaneously bond it to the fibrous material. One or



more of the surfaces applying pressure has a multiplicity of closely spaced raised areas thereon. The laminated product is a fabric-like material useful in the production of textile articles such as clothing, industrial fabrics and home furnishing fabrics.

3,695,968
METHOD OF MAKING A FIBROUS GLASS PLASTIC ENCAPSULATED PLYWOOD OR LIKE CORE PANEL
Robert S. Morrison, Ashtabula, Ohio, assignor to Morrison Industries, Inc., Ashtabula, Ohio
Continuation-in-part of abandoned application Ser. No. 727,808, May 9, 1968. This application Nov. 10, 1970, Ser. No. 88,409
Int. Cl. B32b *3/04*
U.S. Cl. 156—216 **6 Claims**



A reinforced plastic encapsulated plywood and like core panel cured and formed in matched metal dies, the preferred form of which includes fibrous glass roving wrapped about each of the edges of the plywood; method and apparatus for making the same which include winding the roving from side to side and end to end about the plywood core, applying the resin, and forming and curing the resin in a press having such dies, and then removing flash from the finished product.

3,695,969
PLASTICS WEB SLITTING AND SEALING
Peter Edward Highfield and Gordon John Hill, Stevenage, England, assignors to British Visqueen Limited, London, England
Filed Aug. 20, 1970, Ser. No. 65,585
Claims priority, application Great Britain, Sept. 8, 1969, 44,342/69
Int. Cl. B32b *31/00*; B29c *17/00*
U.S. Cl. 156—251 **9 Claims**

A method and device for slitting a plastics web by advancing it continuously past a hot knife intersecting its

path, to slit the web and form a bead seal along the slit edges, in which a current of air is passed continuously

through the slit in the web, in the vicinity of the knife, to prevent or reduce build up of deposits on the knife.

3,695,970

REINFORCED HYGIENIC MEDIUM APPLICATOR TUBES AND METHODS FOR FABRICATING SAME

Joseph A. Voss, Denver, Colo., and Carl W. Johnson, Neenah, Wis.; said Voss assignor to Kimberly-Clark Corporation, Neenah, Wis.

Original application May 10, 1968, Ser. No. 728,290. Divided and this application Apr. 20, 1970, Ser. No. 38,616

Int. Cl. H05b *9/00*; A61f *13/20*

U.S. Cl. 156—272 **4 Claims**

A tubular, hygienic medium applicator device is disclosed including a thin-walled, ring-reinforced external tube. The reinforcing ring is a laminated structure composed of five concentric plies including three plies of paper surrounding a ply of electrically conductive foil coated on its inner surface with a ply of thermoplastic resin material. In the fabrication of the reinforced tube, the ring is telescoped over the exterior surface of the external tube flush with the rear edge thereof. The ring is then bonded in place by inductively heating the foil to heat the thermoplastic resin and fuse the resin to the tube surface.

3,695,971

METHOD FOR FORMING TUBULAR CONTAINER BODY AND TUBULAR CONTAINER BODY PRODUCED THEREBY

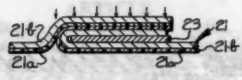
Robert C. Corning, Jr., Hartsville, S.C., assignor to Sonoco Products Company, Hartsville, S.C.

Filed Jan. 5, 1970, Ser. No. 609

Int. Cl. B29c *19/02*; H05b *5/00*

U.S. Cl. 156—275 **4 Claims**

At least one ply of material having at least one marginal portion thereof coated with a heat reactive sealant is spirally wound while forming convolutions having adjacent marginal portions of adjacent convolutions in overlapping relation, preferably with one of the marginal portions being reversely folded, so that at least one of the overlapping marginal portions is coated with a heat reactive sealant. A relatively narrow strip of an electrical-



ly conductive material is positioned in close proximity to the overlapping marginal portions and is subjected to a high frequency alternating electromagnetic field which generates heat in the electrically conductive material for activating the heat reactive sealant and sealing the overlapping marginal portions of adjacent convolutions in overlapping relation.

3,695,972

PROCESS FOR THE CONTINUOUS PRODUCTION OF A FLEXIBLE POROUS MULTILAYER WEB HAVING A HIGH-GLOSS OUTER SURFACE

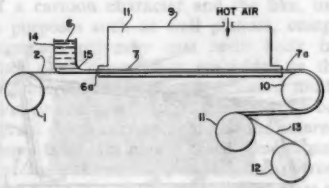
Heinrich Lind, Diedenbergen, Hans Mahl, Wiesbaden, and Ekkehard Beer, Bad Schwalbach, Germany, assignors to Kalle Aktiengesellschaft, Wiesbaden-Biebrich, Germany

Filed Aug. 12, 1970, Ser. No. 63,054

Claims priority, application Germany, Aug. 14, 1969, P 19 41 412.1

Int. Cl. B44d *1/14*; D06n *3/08*

U.S. Cl. 156—324 **18 Claims**



This invention relates to a process for the continuous production of a flexible, porous multilayer web having a high-gloss outer surface; and to the material so produced, which process comprises continuously applying a liquid layer of a urethane prepolymer solution at a uniform thickness to the surface of a microporous layer of a polymer based on polyurethane on a fiber fleece web moving at a constant speed, and heating the layer to polymerize the prepolymer. The layer may then be cooled, covered with a smooth high-gloss film, and wound onto a supply roll.

3,695,973

Patent Not Issued For This Number

3,695,974

TIRE BUILDING DRUM

Virgil E. Henley, Akron, Ohio, assignor to The General Tire & Rubber Company

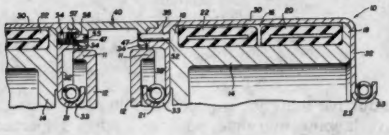
Filed Mar. 9, 1970, Ser. No. 17,662

Int. Cl. B29h *17/16*

U.S. Cl. 156—415 **2 Claims**

A tire building drum, in which axially spaced cylindrical arrays of surface segments are axially adjustable to

vary the over-all length or set of the drum, is provided with a plurality of annularly disposed spacing or bridging segments between the cylindrical arrays which are changed each time the drum set is changed. The surface segments of the respective arrays are situated so as to form axially aligned pairs of segments with the adjacent axial ends defining a gap which changes with a change in



drum set. Each of these gaps is spanned or bridged by a spacer segment. The drum is adjusted to a predetermined length and the spacer segments are snapped onto the surface between the surface segments of the axially aligned pairs. To remove the spacer segments for replacement, the drum is increased in length and the spacer segments simply fall from the drum.

3,695,975

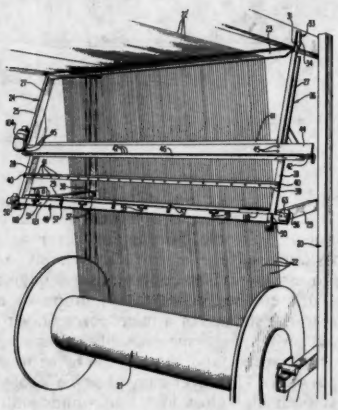
APPARATUS FOR RAPIDLY SPLICING A MULTITUDE OF THERMOPLASTIC YARN ENDS

Willie Vincent Williams, P.O. Box 687, Dalton, Ga. 30720

Continuation-in-part of application Ser. No. 773,773, Nov. 6, 1968. This application Oct. 16, 1970, Ser. No. 81,265

Int. Cl. B65l *69/06*

U.S. Cl. 156—433 **24 Claims**



A support frame for the yarn splicing apparatus is portable and adapted to be suspended directly on the rack which supports the beams of yarn whose yarn ends are being fed into a carpet tufting machine. The apparatus frame may be attached to the beam rack at the location of a spent beam which is to be removed from the rack and replaced by a full beam. The splicing apparatus has means for aligning and securing the yarn ends trailing from the carpet with a like number of yarn ends on a full beam and a radiant heat splicing carriage is propelled across a guide track in close proximity to the ends to be fused or spliced.

3,695,976

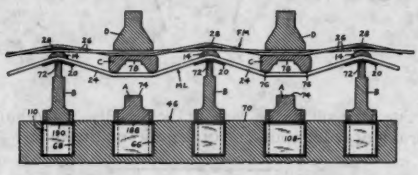
APPARATUS FOR MANUFACTURING OF SEPARABLE FASTENER ELEMENTS

George H. Erb, Cuttingsville, Vt., assignor to Velcro S.A., Nyon, Switzerland

Original application June 22, 1967, Ser. No. 648,118, now Patent No. 3,562,770, dated Feb. 9, 1971. Divided and this application May 21, 1970, Ser. No. 39,467

Int. Cl. D04h *11/08;* **A14b** *17/00*

U.S. Cl. 156—435 **7 Claims**



A three level hermaphrodite separable fastener element having a flexible base sheet, a large number of closely spaced flexible and resilient hooks secured to and extending vertically from the base sheet and a network of crisscrossed, relatively movable, flexible, resilient strands secured to the base sheet and lying in a plane between the open ends of the hooks and the backing sheet. When two such fastener elements are pressed together to form a closure the hooks of each element become enmeshed with the strands of the other. Also, apparatus for continuous forming of such fastened element from three continuous prefabricated webs of hook-forming, mesh-forming and base sheet-forming materials respectively. The apparatus includes multiple sets of shaped metal bands which converge with the hook-forming and mesh-forming webs, longitudinally corrugating the webs and holding them in predetermined shape while being heat set and secured to the base-sheet-forming web.

3,695,977

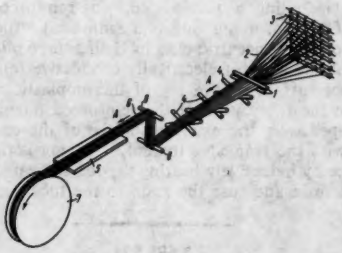
DEVICE TO PRODUCE NONWOVEN CONTINUOUS RIBBONS FROM THREADS

David Georgievich Kandelaki, ulitsa Ordzhonikidze 14; Tenzig Sergeevich Chargeishvili, prospekt V. Pshavela IV kvartal, korpus 21, kv. 26; and Georgy Alexandrovich Skvortsov, prospekt Chavchavadze 19, all of Tbilisi, U.S.S.R.

Filed Mar. 17, 1970, Ser. No. 20,273

Int. Cl. B29h *9/02*

U.S. Cl. 156—441 **6 Claims**



A device to produce continuous nonwoven ribbons from threads, comprising several pairs of successively mounted cylindrical elements each having a smooth surface, the elements in each pair being disposed in parallel vertical planes spaced apart by not more than the diameter of one element, and being inclined at an angle to one another such that the angle between the gen-

eratrices of these elements is greater than 90°, and less than 180°, this angle providing for a transverse shift of the threads from the periphery toward the center, thus forming the ribbon.

3,695,978

Patent Not Issued For This Number

3,695,979

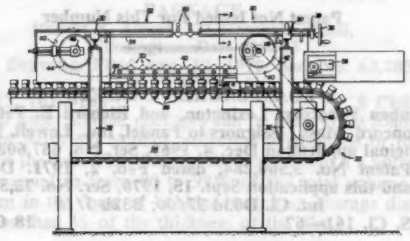
Patent Not Issued For This Number

3,695,980

BASE SEALER

Frederick L. Wallington, Perrysburg, Ohio, assignor to Owens-Illinois, Inc.

Filed July 22, 1970, Ser. No. 57,200
Int. Cl. B30b *15/34;* **B02c** *11/08*
U.S. Cl. 156—583 **10 Claims**



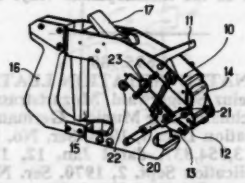
Apparatus for sealing vent openings in the bottom of plastic base elements of composite containers. A series of heated sealing tips are linked together into an endless chain and driven along an endless path having one run which extends above a conveyor upon which the composite containers are conveyed in an inverted position. During their transit of this one run, the tips are engaged with the base elements to heat seal the vent openings. Regulation of the amount of heat applied to the base elements is achieved by maintaining the tip temperature within a predetermined range and contacting the tip and base element for a fixed time interval. The apparatus includes means for maintaining the contact time between tip and base element constant regardless of the conveyor speed.

3,695,981

DISPENSER FOR SELF-ADHERING LABEL

Hubert Boucris, Vigneux, France, assignor to Compagnie Generale d'Automatisme, Paris, France

Filed Jan. 12, 1970, Ser. No. 2,093
Claims priority, application France, Jan. 10, 1969, 6900299
Int. Cl. B32b *31/20;* **B65h** *5/28*
U.S. Cl. 156—584 **5 Claims**



A self-adhering label having a protective covering member over an adhesive coating thereon and an aperture in one of two readily separable portions thereof capable of carrying data in written or coded form and a dispenser of such labels capable of automatically dispensing labels one at a time and removing the protective covering member prior to application of the label to an object.

3,695,982

THREE-DIMENSIONAL PLASTIC COLORED ARTICLE

Norman M. Brody, Los Angeles, Calif., assignor to Norman Industries, Inc., Santa Fe Springs, Calif.

Filed July 10, 1970, Ser. No. 53,918
Int. Cl. B44f *1/08, 7/00*
U.S. Cl. 161—5 **11 Claims**

Three dimensional plastic colored article, e.g. reproduction of a cartoon character and the like, useful for decorative purposes such as wall plaques, comprising a clear transparent polyester cast resin body having a colored fiber glass paper inlay embedded in the resin, such inlay preferably being a silk screened multicolored configuration or characterization, the cast resin body having an external shape corresponding to the external shape of the colored inlay, forming a three dimensional plastic duplicate of the colored inlay having the corresponding coloration and outlines of the colored fiber glass paper inlay, and creating a three dimensional effect to the eye of an observer. Process for making such article wherein a clear polyester liquid resin is poured into a mold having the outlines of the colored inlay to be reproduced, such as a carton character, the colored, e.g. multicolored silk screened, fiber glass paper inlay is then embedded in the wet resin in the mold, and the resin is allowed to set therein.

3,695,983

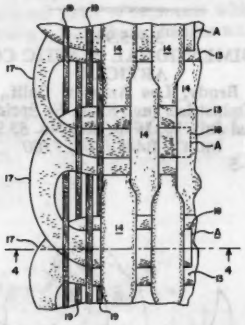
WOVEN ARTICLE AS A CARPET SCRIM

William J. Hogg, Dalton, and Charles A. Jackson, Sterling, N.J., and Septimus A. Harvin and Joseph C. Whitesel, Waynesboro, Va., assignors to Thiokol Chemical Corporation, Bristol, Pa.

Filed Aug. 10, 1970, Ser. No. 69,508
Int. Cl. D03d *11/00, 13/00;* **B32b** *5/00*
U.S. Cl. 161—71 **15 Claims**

A backing or scrim woven from yarns of synthetic plastic, useful in particular for needle punch carpet products and the like is disclosed. The invention is characterized by the yarns in the warp of the scrim being "crowded" and dimensionally selected to have a width to thickness relationship to insure minimum foldover, thereby resulting in a loose warp, despite crowding and possessing a high degree of "springiness" to inhibit width reduction due to mechanical working when woven and used in the carpet

product. A further characteristic is the use of a heat soaked fill yarn, wherein the heat soaking is accomplished prior to weaving, to reduce shrinking in the fill direction.



The final scrim fabric is remarkably non-shrinkable, even when subjected to hot latexing and dyeing procedures in carpet manufacture.

3,695,984

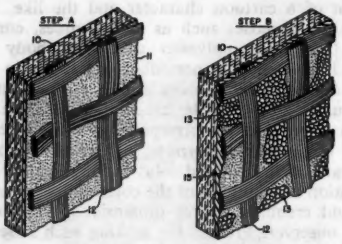
NOVEL MICACEOUS INSULATION

Dow A. Rogers, Jr., Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Original application Jan. 8, 1968, Ser. No. 700,339, now Patent No. 3,586,557, dated June 22, 1971. Divided and this application Jan. 11, 1971, Ser. No. 105,548

Int. Cl. B32b *3/10, 5/16*

U.S. Cl. 161—93 **6 Claims**



A thin solid thermoplastic binder sheet is sandwiched between a sheet of micaceous insulation and a fibrous substrate or backing sheet such as polyester fiber webbing or glass fiber cloth. The composite is heated and pressed together. The thermoplastic binder sheet softens and bonds the fibers of the backing to the mica sheet. The thermoplastic sheet also shrinks so that film discontinuities are formed in areas between the fibers of the backing. The resulting composite insulation has excellent physical and electrical properties and is permeable to liquid insulating varnishes or resins.

3,695,985

HIGH BULK LAMINATES

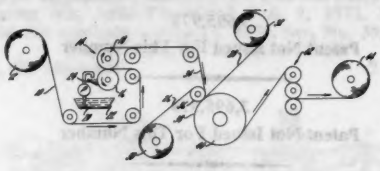
Robert J. Brock, Appleton, and Gordon D. Thomas, Neenah, Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed July 29, 1970, Ser. No. 59,147

Int. Cl. B32b *3/28*

U.S. Cl. 161—129 **9 Claims**

A high bulk, high strength, resilient nonwoven laminate comprised of an intermittently bonded web of continuous thermoplastic polymer filaments and a cellulosic web, the laminates preferably containing three plies, wherein the outer plies are the same, and having been hot embossed under controlled conditions to set the thermoplastic polymer web into a predetermined pattern. The bulk, strength and resilience is retained under wet conditions; and the laminates may be advantageously employed as toweling and the like.



3,695,986

Patent Not Issued For This Number

3,695,987

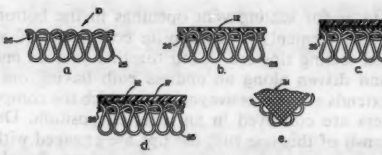
FOAM-BACKED CARPETS

Reuben Wisotzky, Lexington, and Richard E. Petersen, Concord, Mass., assignors to Pandel, Inc., Lowell, Mass.

Original application Dec. 4, 1967, Ser. No. 687,608, now Patent No. 3,560,284, dated Feb. 2, 1971. Divided and this application Sept. 15, 1970, Ser. No. 72,519

Int. Cl. D03d *27/00;* **B32b** *5/18*

U.S. Cl. 161—67 **18 Claims**



An integral tufted carpet, which carpet comprises in combination: a base fabric sheet comprising thermoplastic fibers, which fibers are subject to shrinkage at temperatures in excess of about 200° F.; tufted yarns secured through and to said base fabric sheet to provide a tufted pile face surface and yarn loops on the back surface; a layer of a fused vinyl chloride resin plastisol composition bonded to the back surface, the fused layer substantially filling the interstices between the tufted yarn loops and the base fabric, the fused plastisol composition the sole adhesive employed to lock the tufted yarns to the base fabric, the thermoplastic fibers of the base fabric maintained in substantially nonheat-shrinkable form; and a layer of a thermoplastic foam, one surface of the foam sheet bonded to the surface of the fused plastisol composition, the layers bonded to each other solely by the melted and cooled surfaces of the thermoplastic vinyl chloride resin and the foam.

3,695,988

LAMINATED IMITATION LEATHER

Karl Heinz Steigerwald, Mozartstrasse 27, Lochham, near Munich, Germany

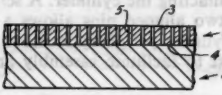
Original application Dec. 8, 1966, Ser. No. 600,122, now Patent No. 3,554,837, dated Jan. 12, 1971. Divided and this application Sept. 2, 1970, Ser. No. 68,999

Int. Cl. B32b *3/10*

U.S. Cl. 161—109 **8 Claims**

A laminated imitation leather comprises a first ply of material which is normally substantially impervious and

a second ply of pervious material bonded to the first ply, in which said first ply has been rendered pervious to water vapor to a degree comparable to natural leather by forming a large number of small perforation holes therein,



and in which said holes penetrate only the first ply and not the second and are characterized by removal from the first ply of material corresponding in volume to the volume of said holes.

3,695,989

COLD WATER SOLUBLE FOAM PLASTIC PACKAGE

Robert E. Albert, 321 Hampton Road, Wilmington, Del. 19803

No Drawing. Filed Aug. 12, 1970, Ser. No. 63,285
Int. Cl. B32b *5/18*
U.S. Cl. 161—160 **8 Claims**

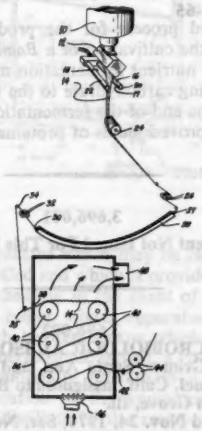
Cold water soluble packages can be made from foamed films of polyvinyl alcohol, polyvinyl pyrrolidone or mixtures of the two. The film has dispersed within it a volume of gas equal to from 80 to 99% of the total volume of the film in the form of bubbles having an average diameter less than ⅓ of the thickness of the film.

3,695,990

CRINKLED AND FIBRILLATED RIBBON

Sohinder Nath Chopra, Saint Bruno, Quebec, and Hilaire Marcel Turmel, Drummondville, Quebec, Canada, assignors to Chemcell Limited, Montreal, Quebec, Canada

Original application Jan. 11, 1968, Ser. No. 697,209, now Patent No. 3,562,369, dated Feb. 9, 1971. Divided and this application Sept. 10, 1970, Ser. No. 71,235
Int. Cl. D01d *1/00*
U.S. Cl. 161—168 **2 Claims**



A fibrillated and crinkled ribbon is disclosed and claimed which includes a central portion made up of closely superimposed loosely bound crinkled filaments and fibrils forming an irregular sinusoidal pattern and yarn like hem portions consisting of closely tied filaments irregularly rotating so as to form an elongated helix; the claimed ribbons are useful in the textile industry such as for upholstery, carpet pile and knitting yarn.

3,695,991

Patent Not Issued For This Number

3,695,992

POROUS AROMATIC POLYAMIDE FIBER

Gordon M. Moulds, Waynesboro, Va., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation-in-part of application Ser. No. 856,183, Sept. 8, 1969. This application Aug. 26, 1970, Ser. No. 71,286
Int. Cl. D01f *7/00*
U.S. Cl. 161—178 **4 Claims**

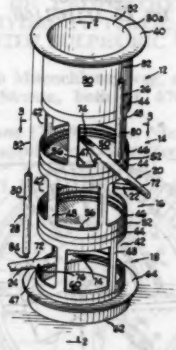
Porous fibers of an aromatic polyamide in which the void volume for pores having pore diameters of 0.12 micron or less is greater than 0.03 cc./gm., and the void volume for pores having pore diameters of more than 0.12 micron is less than 0.02 cc./gm. Such fibers are prepared by a process wherein freshly spun fibers are drawn and extracted in one or more solvent-containing aqueous baths of specified composition and temperature, subjected to steam when the drawing step is carried out at certain conditions, and are then dried. Such fibers are dyeable without the use of superatmospheric pressures or dyeing assistants.

3,695,993

FLUID OPERATED CHIMES

Norman T. McFarland, Urbana, Ill., assignor to Marvin Glass & Associates

Filed Feb. 4, 1971, Ser. No. 112,683
Int. Cl. A63h *29/14*
U.S. Cl. 161—7 **10 Claims**



A novelty device characterized by the provision of vertically arranged chambers with outlets in communication with subjacent chambers and movable striker elements in the path of fluid flow from the outlets to the next subjacent chamber. The movable striker elements are pivoted to the chambers and chime elements are connected to the exterior of the device in a position to be engaged by the movable striker elements as the striker elements move responsive to reception of a predetermined quantity of fluid.

3,695,994

IMPREGNATION OF WOOD CHIPS WITH A CELLULOSE PROTECTOR FOLLOWED BY A SODA-OXYGEN PULPING STAGE

Hans Edmund Worster, Richmond, British Columbia, and Marian Franciszek Pudek, Coquitlam, British Columbia, Canada, assignors to MacMillan Bloedel Limited, Vancouver, British Columbia, Canada

No Drawing. Filed Apr. 13, 1970, Ser. No. 28,004
Int. Cl. D21c *9/10*
U.S. Cl. 162—65 6 Claims

Impregnating wood chips with an aqueous solution of an inorganic salt of magnesium or calcium as cellulose protector and thereafter pulping the wood chips with sodium hydroxide in the presence of an excess of oxygen.

3,695,995

OXYGEN-PERACETIC ACID-CHLORINE DIOXIDE PULP BLEACHING SEQUENCE

Sunanda K. Roymoulik, Suffern, N.Y., assignor to International Paper Company, New York, N.Y.

No Drawing. Filed May 25, 1970, Ser. No. 40,404
Int. Cl. D21c *9/10, 9/12, 9/16*
U.S. Cl. 162—65 16 Claims

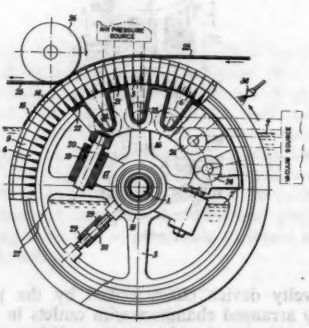
A process of bleaching chemical pulps which comprises a first stage of bleaching with oxygen in the presence of $Na_2S_2O_4$ or Na_2S_x, wherein x is an integer from 1 to 4, and optionally NaOH, followed by a peracetic acid second stage, results in a pulp having a brightness of about 60% or above which is suitable for newsprint furnish. A further bleaching stage employing chlorine dioxide results in a pulp having a brightness of about 80% or above which is suitable for dissolving pulp and writing and bond papers.

3,695,996

PAPERMAKING MACHINE SHAPING CYLINDER HAVING TRAPEZOIDAL-SHAPED PERIPHERAL TROUGH-LIKE BOXES

Armando Frezzotti, Fabriano, Italy, assignor to Fibrostanpa S.r.l., Milan, Italy

Filed Feb. 12, 1970, Ser. No. 10,853
Claims priority, application Italy, Feb. 18, 1969, 35,084/69
Int. Cl. D21f *1/60*
U.S. Cl. 162—273 5 Claims



A papermaking machine shaping cylinder which includes a plurality of trapezoidal-shaped trough-like boxes at the periphery which are open to a wire mesh circumferentially disposed on the cylinder over the boxes. The boxes are connected by rings to twin wheels spaced apart from one another, and which are themselves connected to the shaft of the cylinder. Two distributor members are urged against openings in the rings so as to communicate either compressed air or vacuum to the interior of the boxes in a fashion to adher fibers from a slurry onto the wire mesh and then to transfer the formed fibrous sheet onto a felt contacting the cylinder. A screw-threaded bush mounted on two aligned pins allows a displaceable segment of the cylinder periphery to move toward and away from the shaft to facilitate assembly and disassembly of the mesh.

3,695,997

Patent Not Issued For This Number

3,695,998

Patent Not Issued For This Number

3,695,999

ISOLATION OF ENZYMES FROM AQUEOUS MEDIA BY MEANS OF POLYANIONS

Peter Salvatore Forgione, 120 Little Hill Drive 06905, and Nelda Marjorie Smyth, 444 Bedford St. 06902, both of Stamford, Conn.

No Drawing. Filed July 22, 1970, Ser. No. 57,343
Int. Cl. C07g *7/02*
U.S. Cl. 195—63 5 Claims

Proteolytic enzymes, and particularly alkali stable proteases such as those produced by the fermentation of various microorganisms, are separated from the fermentation liquor by adding polyanions thereto. The polyanion forms with the enzyme a reversible ionic complex which precipitates upon acidification or upon the addition of a polycationic flocculating agent. For the most important uses, in soaps and detergents, it is unnecessary to separate the enzyme from the complex with the polymer.

3,696,000

PROCESS FOR THE PRODUCTION OF ALKALINE PROTEINASE

Guido M. Miescher, Terre Haute, Ind., assignor to Commercial Solvents Corporation

No Drawing. Filed Sept. 10, 1970, Ser. No. 71,236
Int. Cl. C12d *13/10*
U.S. Cl. 195—65 2 Claims

An improved process for the production of alkaline proteinase by the cultivation of a *Bacillus subtilis* type of organism on a nutrient fermentation medium by continuously introducing carbohydrate to the fermentor after the 14th hour to the end of the fermentation, thereby producing greatly improved yields of proteinase.

3,696,001

Patent Not Issued For This Number

3,696,002

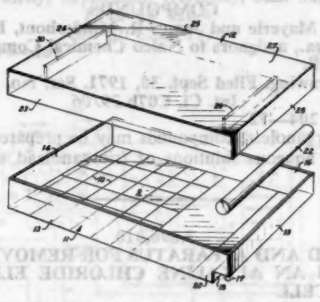
MICROBIOLOGICAL ISOLATOR

Raymond E. Grimes, Santa Ana, and Robert W. Bruen, Laguna Niguel, Calif., assignors to Baxter Laboratories, Inc., Morton Grove, Ill.

Filed Nov. 24, 1970, Ser. No. 92,364
Int. Cl. C12k *1/00*
U.S. Cl. 195—139 13 Claims

A relatively flat rectangularly shaped container assembly having a cover, preferably of transparent material,

which cover has a depending skirt that encompasses upwardly extending walls of the container. The container is constructed to contain a quantity of gelled material as a culture medium for bacteria and other microorganisms. A roller is positioned at one side for gravity movement



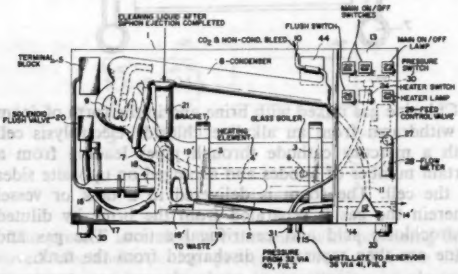
from that side to the other side when the cover is removed and the container is inclined, whereby colonies of the microorganisms can be rapidly and uniformly isolated for identification and enumeration.

3,696,003

DISTILLATION APPARATUS

Stanley Frederick Fitch, Loughborough, and Dara Derrick Phiroz St. John, Quorn, England, assignors to Fisons Limited, Felixstowe, England

Filed Mar. 11, 1970, Ser. No. 18,641
Claims priority, application Great Britain, Mar. 19, 1969, 14,417/69; June 13, 1969, 30,034/69
Int. Cl. B01d *3/00, 3/12*
U.S. Cl. 202—160 **8 Claims**



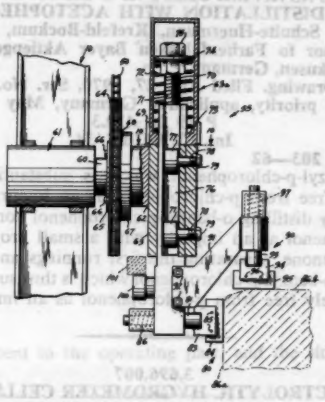
A distillation apparatus which may be cleaned without having to be dismantled and which is provided with means for preventing overheating in the event of failure in the liquid feed to the boiler which apparatus comprises a boiler provided with heating means which may be shut off by means of a thermostatic switch, a condenser which feeds a reservoir optionally fitted with a level sensing device so that operation of the apparatus only occurs when the level of distillate in the reservoir falls below a given level, and a syphon which may be actuated to drain distill and from the boiler to permit flushing of the boiler with a cleaning or de-furring liquid which is in turn drained from the boiler by the syphon.

3,696,004

OSCILLATING SCRAPING MECHANISMS FOR COKE OVEN JAMBS

Charles D. McCullough, Metropolis, Ill., assignor to Allied Chemical Corporation, New York, N.Y.

Filed July 15, 1970, Ser. No. 55,127
Int. Cl. C10b *43/04*
U.S. Cl. 202—241 **21 Claims**



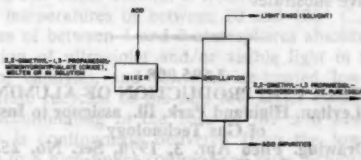
In apparatus for mechanically scraping formed deposits from the jamb of a coke oven, an oscillating scraping mechanism for scraping said deposits from substantially right angular surfaces extending along either the jamb top or bottom walls, and arcuate corner portions contiguous therewith. The mechanism features a shaft which is provided within a housing and has one end extending therefrom with a scraper unit thereon. In response to the oscillation of the housing, the shaft reciprocates linearly in following a cam means thereby resulting in a scraping of said deposits.

3,696,005

PURIFICATION OF 2,2-DIMETHYL-1,3-PROPANEDIOL MONOHYDROXYPIVALIC ESTER BY DISTILLATION WITH SULPHURIC OR SULPHONIC ACID

Werner Fuchs, 30b Muenchbuschweg, and Franz Merger, 8 Homburger Strasse, both of 6700 Ludwigshafen, Germany

Filed June 17, 1970, Ser. No. 47,150
Claims priority, application Germany, June 26, 1969, P 19 32 420.0
Int. Cl. B01d *3/34;* **C07c** *69/66*
U.S. Cl. 203—35 **7 Claims**



Purification of 2,2-dimethyl-1,3-propanediol monohydroxypivalic ester by distilling the crude product in the presence of an acid compound. 2,2-dimethyl-1,3-propanediol monohydroxypivalic ester purified by the invention is a starting material for synthetic resins, plasticizers and plastics auxiliaries and may be employed for uses which

require very high purity such as the production of colorless polyesters for the plastics, surface coatings and plasticizer industries.

3,696,006

o-BENZYL-p-CHLOROPHENOL SUBSTANTIALLY COMPLETELY FREE FROM p-CHLOROPHENOL AS AN IMPURITY AND ITS PRODUCTION BY DISTILLATION WITH ACETOPHENONE

Werner Schulte-Huermann, Krefeld-Bockum, Germany, assignor to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Apr. 27, 1970, Ser. No. 32,466
Claims priority, application Germany, May 2, 1969, P 19 22 410.3
Int. Cl. B01d *3/34*
U.S. Cl. 203—62 10 Claims

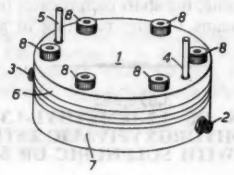
o-Benzyl-p-chlorophenol which is substantially completely free from p-chlorophenol as an impurity is produced by distilling o-benzyl-p-chlorophenol containing p-chlorophenol as an impurity with a small proportion of acetophenone, separating the first runnings and recovering the o-benzyl-p-chlorophenol which is thus substantially completely free from p-chlorophenol as an impurity.

3,696,007

ELECTROLYTIC HYGROMETER CELLS AND METHOD OF USING SAME

Frank Bennett, Croftways, Long St., Williton, Taunton, Somerset, England, and Ivor John Conibear, Millard's Hill House, Instow, Bideford, North Devon, England

Filed Feb. 3, 1970, Ser. No. 8,216
Int. Cl. G01n *27/46*
U.S. Cl. 204—1 T 16 Claims



An improved method of measurement of the moisture content of a gas by passing the gas through an improved form of electrolytic hygrometer cell wherein the area of contact of the gas with the detector element of the cell progressively decreases in size from the inlet to the outlet in the direction of flow and an improved form of detecting element for such a cell wherein the interdigitated electrode pattern is embedded in the surface of a non-conductive substrate.

3,696,008

ELECTROLYTIC PRODUCTION OF ALUMINUM

Jacob Levitan, Highland Park, Ill., assignor to Institute of Gas Technology

No Drawing. Filed Apr. 3, 1970, Ser. No. 25,572
Int. Cl. C22d *3/12, 3/02*
U.S. Cl. 204—67 8 Claims

An improved electrolytic process for the production of aluminum from a molten salt electrolyte involving the use of hydrogen as an anodic reactant on non-carbon electrodes. The anode may be either porous or non-porous metallic or other conductive material. The reaction occurring on the cathode surface involves the reduction of aluminum cations to form substantially impurity-free aluminum. At the anode, hydrogen is oxidized to water vapor which is driven off and collected from above the cryolite melt.

3,696,009

ELECTRO SYNTHESIS OF TETRAORGANOLEAD COMPOUNDS

Evan A. Mayerle and James R. Minderhout, Lake Jackson, Tex., assignors to Nalco Chemical Company, Chicago, Ill.

No Drawing. Filed Sept. 30, 1971, Ser. No. 185,360
Int. Cl. C07b *29/06*
U.S. Cl. 204—72 6 Claims

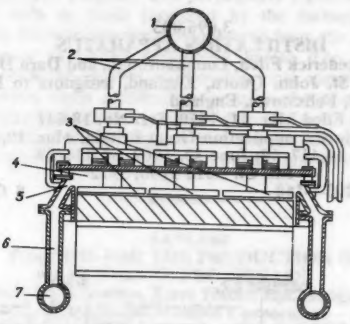
Tetraorganolead compounds may be prepared by electrolyzing aqueous solutions of triorganolead salts.

3,696,010

METHOD AND APPARATUS FOR REMOVING GAS FROM AN ALKALINE CHLORIDE ELECTROLYSIS CELL

Franz Glos, Salzgitter, and Joachim Mischke, Dortmund, Germany, assignors to Friedrich Uhde G.m.b.H., Dortmund, Germany

Filed Aug. 24, 1970, Ser. No. 66,441
Claims priority, application Germany, Oct. 24, 1969, P 19 53 627.7
Int. Cl. C01d *1/12;* B01k *3/00;* C22d *1/04*
U.S. Cl. 204—99 3 Claims



Chlorine gas mixed with brine and in the form of foam is withdrawn from an alkaline chloride electrolysis cell with a mercury cathode through pipes leading from a certain number of anodes and arranged on opposite sides of the cell. The foam is delivered to a tank or vessel wherein the gas is separated from the brine by diluted hydrochloric acid and centrifugal action. The gas and brine are then separately discharged from the tank.

3,696,011

PROCESS FOR ELECTRODEPOSITING MANGANESE METAL

San-Cheng Lai, Oklahoma City, Okla., assignor to Kerr-McGee Chemical Corp., Oklahoma City, Okla.

No Drawing. Filed Oct. 28, 1970, Ser. No. 84,936
Int. Cl. C22d *1/24*
U.S. Cl. 204—105 M 3 Claims

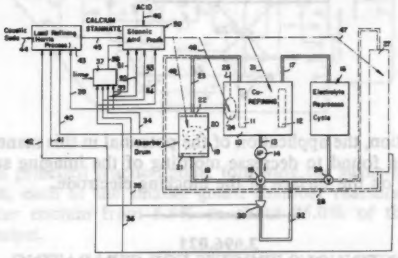
A process for electrodepositing manganese metal wherein a selenium compound is added to a conventional manganese metal electrolyte to increase the current efficiency of the cell and a small quantity of sulfur dioxide is introduced to maintain the selenium compound in solution in the electrolyte.

3,696,012

PROCESS FOR PREVENTING SUPERSATURATION OF ELECTROLYTES WITH ARSENIC, ANTIMONY AND BISMUTH

Reinhold Schulze, Hamburg, Germany, assignor to Norddeutsche Affinerie, Hamburg, Germany

Filed Jan. 12, 1971, Ser. No. 105,847
Claims priority, application Germany, Jan. 31, 1970, P 20 04 410.4
Int. Cl. C22d *1/16*
U.S. Cl. 204—108 **9 Claims**



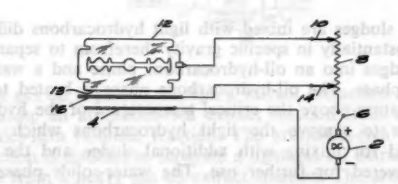
A process for preventing excessive accumulation of arsenic, antimony and bismuth in electrolytes used in the electrolytic refining of nonferrous metals, especially copper. The process involves adsorbing these impurities upon a chemical adsorbent in the form of a low-solubility metal-oxide hydrate (especially stannic acid) stable in the presence of sulfuric acid.

3,696,013

PROCESSES FOR SHARPENING RAZOR BLADES

Bernard Tafapolsky, Newton, Mass., assignor to The Gillette Company, Boston, Mass.

Continuation-in-part of application Ser. No. 609,862, Jan. 17, 1967. This application Jan. 6, 1970, Ser. No. 1,015
Int. Cl. B23p *1/10*
U.S. Cl. 204—129.55 **8 Claims**



The present invention is concerned with providing improved electrosharpening processes. Generally, the improvements are brought about by positioning an electropositive control electrode adjacent the edge or point being formed. The use of such electrodes enables one to produce sharpened points and edges of especially desirable geometry.

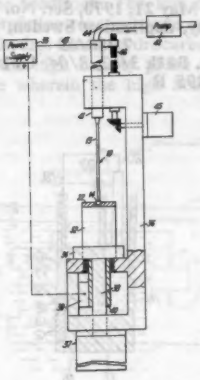
3,696,014

ELECTROLYTIC DRILLING

John Goodard, Bristol, England, John Francis Wilson, West Peabody, Mass., and Derek Aubrey Glew, Bristol, England, assignors to Rolls-Royce Limited, Moor Lane, Derby, England

Filed Apr. 27, 1970, Ser. No. 32,112
Int. Cl. B23p *1/00, 1/02, 1/12*
U.S. Cl. 204—143 M **10 Claims**

Electrolytic drilling wherein the electrode is continuously rotated relatively to the workpiece, and lateral pressing contact is continuously maintained between a predetermined side only of an insulated part of the electrode, adjacent to the operating part, and the side wall of the hole.



3,696,015

PROCESS FOR REDUCING THE CONCENTRATION OF 2 - DICHLOROBUTADIENE-(1,3) IN 1,2-DICHLOROETHANE RECOVERED IN THE INCOMPLETE THERMAL CRACKING INTO VINYL CHLORIDE

Peter Wirtz, Cologne-Lindenthal, Armin Jacobowsky, Knapsack, near Cologne, Werner Mittler, Hermulheim, near Cologne, and Wilfried Gerhardt, Knapsack, near Cologne, Germany, assignors to Knapsack Aktiengesellschaft, Knapsack, near Cologne, Germany

Filed Nov. 18, 1970, Ser. No. 90,716
Claims priority, application Germany, Nov. 26, 1969, P 19 59 211.1
Int. Cl. B01j *1/10*
U.S. Cl. 204—163 R **3 Claims**

The concentration of 2-chlorobutadiene-(1,3) in 1,2-dichloroethane recovered in the incomplete thermal cracking of 1,2-dichloroethane into vinyl chloride and being contaminated with low boilers boiling at a temperature lower than 83.7° C. (760 mm. Hg) and high boilers boiling at a temperature higher than 83.7° C. (760 mm. Hg), is reduced by transforming the 2-chlorobutadiene-(1,3) low boiler into a high boiler contaminant. To this end, the 1,2-dichloroethane is distillatively freed from its low boiler contaminants in a low boiler column; all or a portion of the low boiler contaminants concentrating near the head of the low boiler column is continuously withdrawn therefrom; the low boiler concentrate withdrawn from the low boiler column is treated with gaseous chlorine at temperatures of between 10 and 120° C., under pressures of between 1 and 3 atmospheres absolute, with irradiation of ultraviolet and/or visible light in the absence of catalysts, and the chlorine-treated low boiler concentrate recycled to the said low boiler column; material accumulating in the base of the said low boiler column is continuously delivered from the low boiler column to a high boiler column; and pure dichloroethane is distilled off from the high boiler contaminants in the high boiler column.

3,696,016

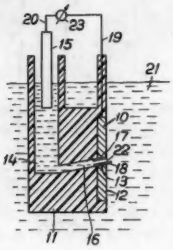
Patent Not Issued For This Number

3,696,017

MEANS FOR ELECTROLYTICALLY DEPOSITING METAL ON AN OBJECT OR FOR ANODIC OXIDATION OF AN OBJECT

Bengt Wallen, Vasteras, Sweden, assignor to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed May 21, 1970, Ser. No. 39,319
Claims priority, application Sweden, May 27, 1969, 7,388/69
Int. Cl. B01k *3/02, 3/04;* **G01n** *27/30*
U.S. Cl. 204—195 R **1 Claim**



A device for electrolytically depositing metal on an object or for anodic oxidation of an object immersed in an electrolytic bath, having a reference electrode in contact with the electrolyte in the bath through an ion-conducting connection to measure the potential of the object. An auxiliary electrode is placed close to the outlet of the ion-conducting connection to simulate the conditions at the surface of the object. The potential can then be measured from the auxiliary electrode.

3,696,018

Patent Not Issued For This Number

3,696,019

THALLIUM ALLOY ELECTRODE

James R. Arrington, Muskego, and Karl Lewis King, Milwaukee, Wis., assignors to American Limnetics Instruments, Inc.

Filed June 5, 1970, Ser. No. 43,863
Int. Cl. B01k *3/04, 3/06*
U.S. Cl. 204—290 R **4 Claims**

An electrode for sensing dissolved oxygen in an electrolytic media is composed of a core having a major portion of thallium and a minor amount of mercury and an outer coating of a saturated thallium-mercury amalgam thereon. The electrode core is formed as a solid electrode and the preferred amount of thallium is 87% by weight with the mercury being present in the amount of 13%. The electrode composition is employed to sense dissolved oxygen in an electrolytic media and is substantially unaffected by wide variations in temperature, pH, pressure, salinity and flow rate.

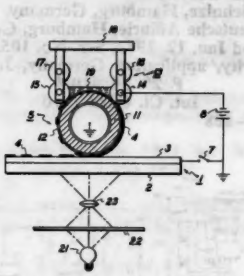
3,696,020

ELECTROPHORETIC IMAGING APPARATUS INCLUDING MEANS TO COAT AND ELECTRIFY THE IMAGING ELECTRODE

Leonard M. Carreira, Penfield, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Original application Jan. 2, 1969, Ser. No. 789,088. Divided and this application Aug. 24, 1970, Ser. No. 66,207
Int. Cl. B01k *5/00;* **G03g** *15/00*
U.S. Cl. 204—300 **5 Claims**

It has been determined that by applying DC voltage to a coating means in the electrophoretic imaging system that it is possible to establish the necessary field for imaging as well as eliminating the buildup of unwanted residual charge on the surface of the blocking electrode.



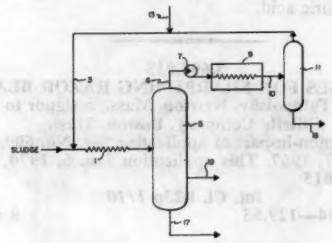
In addition, the application of the potential in this manner has been found to decrease mottling of the imaging suspension on the surface of the blocking electrode.

3,696,021

CONTINUOUS PROCESS FOR SEPARATING OILY SLUDGES

Edward L. Cole, Fishkill, and Howard V. Hess, Glenham, N.Y., assignors to Texaco Inc., New York, N.Y.

Filed June 12, 1970, Ser. No. 45,742
Int. Cl. C01g *33/04*
U.S. Cl. 208—13 **9 Claims**



Oily sludges are mixed with light hydrocarbons differing substantially in specific gravity therefrom to separate the sludges into an oil-hydrocarbons phase and a water-solids phase. The oil-hydrocarbons phase is heated to a temperature above the critical temperature of the hydrocarbons to remove the light hydrocarbons which are recycled for mixing with additional sludge and the oil is recovered for further use. The water-solids phase is treated to obtain water of reduced Chemical Oxygen Demand which can be discharged in receiving bodies of water without polluting the same. The solids slurried with water which are recovered find utility, inter alia, as land fill.

3,696,022

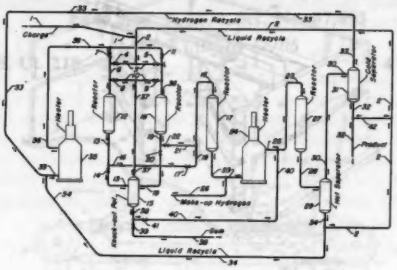
SWING-BED GUARD CHAMBER IN HYDROGENERATING AND HYDROREFINING COKE-FORMING HYDROCARBON CHARGE STOCK

Leroi E. Hutchings, Mount Prospect, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed July 27, 1970, Ser. No. 58,443
Int. Cl. C10g *23/00*
U.S. Cl. 208—57 **9 Claims**

A process for hydrorefining sulfurous hydrocarbon distillates containing mono-olefinic, di-olefinic and aromatic hydrocarbons. Particularly directed toward the stabilization of a pyrolysis naphtha, the process makes use of a multiple-stage system. Ease of operation, increased

catalyst stability throughout the process and various economic advantages are obtained through the utilization of a swing-bed reaction zone system which constitutes the initial portion of the process. In combination with the



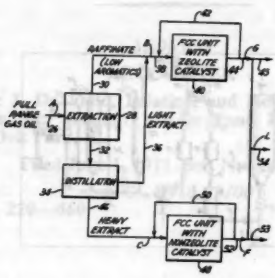
first principal reaction zone, following the swing-bed section, each of the smaller guard chamber reactors in the latter contain from 5.0% to about 25.0% of the total catalyst.

3,696,023

CRACKING OF A GAS OIL WITH ZEOLITE AND NONZEOLITE CATALYST

Robert W. Koch, Verona, Pa., assignor to Gulf Research & Development Company, Pittsburgh, Pa.

Filed July 23, 1970, Ser. No. 57,507
Int. Cl. C10g *11/04*
U.S. Cl. 208—87 **4 Claims**



A gas oil is passed through a solvent extraction zone to separate an aromatics-rich extract fraction from an aromatics-lean raffinate fraction. The aromatics-rich extract fraction is distilled to separate a light gas oil extract fraction from a heavy gas oil extract fraction. The aromatics-lean raffinate fraction and the light gas oil extract fraction are cracked in a fluid zeolite reaction zone without added hydrogen to produce a first gasoline product. The heavy gas oil extract fraction is cracked in a fluid nonzeolite cracking zone without added hydrogen to produce a second gasoline product. The first and second gasoline products are blended.

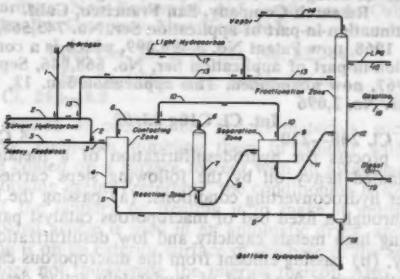
3,696,024

PETROLEUM CRUDE OIL CONVERSION PROCESS

Laurence O. Stine, Western Springs, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Continuation-in-part of application Ser. No. 758,217, Sept. 9, 1968. This application July 27, 1970, Ser. No. 58,480
Int. Cl. C10g *31/14*
U.S. Cl. 208—87 **16 Claims**

A heavy hydrocarbon feedstock is converted into more valuable hydrocarbon product by a combination extraction and hydrorefining process which includes the contacting of the feedstock in a liquid-liquid contacting zone with a light hydrocarbon solvent under conditions sufficient to produce a low density liquid phase comprising solvent and a low boiling fraction of the feedstock, and a high density liquid phase comprising solvent and a high boiling fraction of the feedstock. The low density phase is passed to a hydrorefining reaction zone and the resulting effluent contains hydrorefined hydrocarbon and solvent. The effluent and the high density phase are passed to a fractionation zone wherein the high boiling fraction of



the feedstock is recovered, hydrorefined product is recovered, and light hydrocarbon solvent is recovered for recycle to the contacting zone. The light hydrocarbon solvent contains hydrocarbons having from three to ten carbon atoms per molecule, and preferably from five to eight carbon atoms per molecule. The process has particular application to hydrotreating and hydrocracking heavy feedstocks containing a significant quantity of asphaltic materials, organo-metallic complexes, sulfur compounds, and nitrogen compounds, wherein at least about 10% by volume of the feedstock boils at a temperature in excess of about 1050° F.

3,696,025

CATALYTIC CRACKING BY ADDITION OF TITANIUM TO CATALYST

Donald O. Chessmore, Pleasant Hill, and Joseph Jaffe, Berkeley, Calif., assignors to Chevron Research Company, San Francisco, Calif.

No Drawing. Filed Nov. 9, 1970, Ser. No. 88,230
Int. Cl. C10g *11/04*; B01j *11/68*
U.S. Cl. 208—113 **3 Claims**

In a catalytic cracking process wherein hydrocarbons are cracked at an elevated temperature in the presence of cracking catalyst and the cracking catalyst is regenerated by burning coke off the catalyst using oxygen to obtain regenerator effluent gas containing CO_2 and CO, a method for increasing the coke burning rate and the CO_2/CO ratio in the regenerator effluent gases which comprises adding titanium or a titanium compound to the cracking catalyst during the catalytic cracking process.

3,696,026

METHOD FOR ACTIVATING A HYDROCRACKING CATALYST

Algie J. Conner, Downers Grove, and Frank H. Adams, La Grange Park, Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Continuation-in-part of application Ser. No. 799,100, Feb. 13, 1969, now Patent No. 3,586,620. This application June 1, 1970, Ser. No. 42,588
The portion of the term of the patent subsequent to June 22, 1987, has been disclaimed
Int. Cl. C10g *23/02*; B01j *11/40*
U.S. Cl. 208—111 **10 Claims**

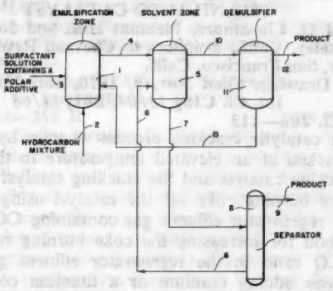
A hydrocracking catalyst in an oxidized state is activated by a method which gives a superior performing

hydrocracking catalyst. The hydrocracking catalyst is reduced and sulfided by a procedure whereby a liquid hydrocarbon stream is contacted with the hydrocracking catalyst during reduction and sulfiding. The presence of the liquid hydrocarbon stream reduces the effects of native water and water of reduction. Sulfur addition may be continued during steady-state operation.

3,696,027
MULTI-STAGE DESULFURIZATION
Alan G. Bridge, El Cerrito, Calif., assignor to Chevron Research Company, San Francisco, Calif.
Continuation-in-part of application Ser. No. 743,568, July 9, 1968, now Patent No. 3,496,099, which is a continuation-in-part of application Ser. No. 668,046, Sept. 15, 1967, now abandoned. This application Jan. 12, 1970, Ser. No. 2,096
Int. Cl. C10g *23/02*
U.S. Cl. 208—210 **5 Claims**

A process for hydrodesulfurization of a metals-contaminated heavy oil by the following steps carried out under hydroconverting conditions: (a) passing the heavy oil through a fixed bed of macroporous catalyst particles having high metals capacity and low desulfurization activity, (b) passing effluent from the macroporous catalyst bed through a fixed bed of moderately active desulfurization catalyst particles, and (c) passing effluent from the bed of moderately active desulfurization catalyst particles through a fixed bed of highly active desulfurization catalyst particles.

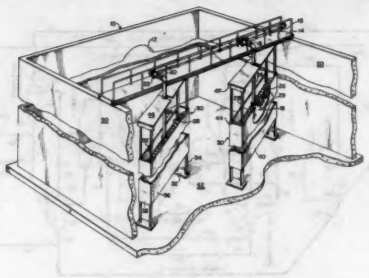
3,696,028
LIQUID MEMBRANE SEPARATION PROCESS
Norman N. Li, 158 Oakwood Ave., Edison, N.J. 08817, and Robert B. Long, 249 E. Highland Ave., Atlantic Highlands, N.J. 07716
Continuation-in-part of application Ser. No. 791,586, Jan. 16, 1969. This application Aug. 24, 1970, Ser. No. 66,549
Int. Cl. C10g *21/10*; B01j *17/34*
U.S. Cl. 208—308 **11 Claims**



A process for separating components of a hydrocarbon mixture by selective permeation through a liquid surfactant membrane containing a polar additive.

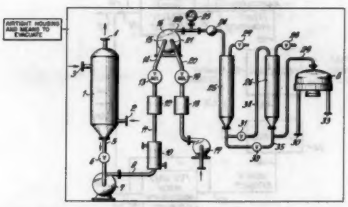
3,696,029
DEEP TANK AERATION USING EDUCTOR TUBES OF ELONGATE CROSS-SECTION
James Donald Walker, Aurora, Ill., assignor to Chicago Bridge & Iron Company
Filed Mar. 16, 1970, Ser. No. 19,989
Int. Cl. C02c *1/12*
U.S. Cl. 210—14 **19 Claims**

Aeration of huge quantities of sewage in very deep tanks is made practicable by efficient use of eductor tubes. The air is liberated at only a moderate depth, the tubes extend downwardly from only slightly above the level of liberation, and the tubes are elongate in horizontal cross-



section for effective utilization of the full cross-section. There is a baffle at surface level above the tubes.

3,696,030
PROCESS AND APPARATUS FOR DE-SLIMING VEGETABLE OILS
Heinz Otto Schumacher, 26 Hoperfeld, 205 Hamburg 80, Germany
Filed Sept. 15, 1970, Ser. No. 72,419
Int. Cl. B01d *11/04*
U.S. Cl. 210—21 **9 Claims**



A process for de-sliming vegetable oils which are obtained by extraction and Miscella distillation, particularly for de-sliming soy bean oil, in which the oil to be deslimed is reacted with water in swelling or steeping containers. The oil is separated from the water-soluble phosphatides in a separating stage. Gas-free oil and gas-free water are used for the de-sliming operation. The de-sliming operation and the subsequent separation of the oil from the phosphatides is carried out in a gas-free medium.

3,696,031
OSMOSIS PROCESS
Lino Credali, Bologna, and Paolo Parrini, Novara, Italy, assignors to Consiglio Nazionale Delle Ricerche and Montecatini Edison S.p.A.
No Drawing. Filed July 6, 1970, Ser. No. 52,748
Claims priority, application Italy, July 8, 1969, 19,318/69
Int. Cl. B01d *13/00*
U.S. Cl. 210—23 **2 Claims**

Osmosis process utilizing as the semi-permeable membrane a polyamide comprising the reaction product of a piperazine with a dicarboxylic acid or acid anhydride.

3,696,032

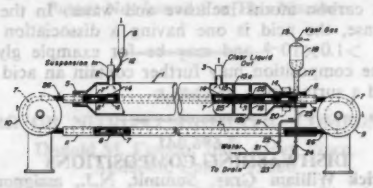
PROCESS FOR THE SEPARATION OF MAGNETIC PARTICLES FROM A FLUID STREAM

Vladimir Haensel, Hinsdale, Ill.
(30 Algonquin Road, Des Plaines, Ill. 62516)

Filed Nov. 9, 1970, Ser. No. 87,693

Int. Cl. B01d *17/06*

U.S. Cl. 210—42 4 Claims



A process in which relatively large pre-magnetized iron particles are introduced into a fluid stream to scavenge smaller magnetic particles therefrom. The fluid stream is then passed through an annular space created by an open-ended conduit supported within a casing. A train of permanent magnets is moved through the conduit to attract the scavenged magnetic particles to the outer surface thereof, and the particles are swept along said surface by the traveling magnetic field to a particle collecting chamber.

3,696,033

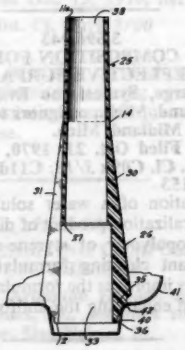
LINT FILTER

Dominic J. De Fano, Palatine, and Robert I. Kallman, Elburn, Ill., assignors to De Fano Kallman Design, Inc., Oak Park, Ill.

Filed June 1, 1971, Ser. No. 148,425

Int. Cl. B01d *23/00*

U.S. Cl. 210—460 9 Claims



A lint filter for mounting upright in a tub, sink or the like basin by insertion into standard sized drain openings which has an elongated body portion with a plurality of axially elongated circumferentially spaced radial fins increasing in diameter from a level below the open top of the tube and projecting beyond the bottom end of the tube thereby providing drain slots therebetween and being progressively stepped at their bottom ends to fit a wide range of drain sizes.

3,696,034

MIXED ALKANOLAMIDE FABRIC SOFTENING COMPOSITIONS

Gordon Trent Hewitt, Upper Montclair, and Annie Sue Giordano, New Brunswick, N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Filed Oct. 20, 1970, Ser. No. 82,244

Int. Cl. C09k *3/16*; D06m *13/40*

U.S. Cl. 252—8.8 4 Claims

A method of conditioning fibrous materials, such as laundry, comprises tumbling them in contact with an article coated on a surface thereof with an alkanolamide conditioning agent. Preferably, the conditioning is softening of the laundry or treating it to make it antistatic, the coated article is used in an automatic dryer, and the coating is on an exterior surface of the base of the article and does not impregnate the interior thereof. Also preferably, the alkanolamide softening compound is employed in mixture with other such alkanolamide softeners, it being particularly preferred to employ mixtures of various higher fatty acid mono-lower alkanolamides and mixtures of higher fatty acid mono-lower alkanolamide and higher fatty acid di-lower alkanolamide.

Also disclosed are the article used in the treatment of the laundry and a method of manufacturing it by coating a base with a melt of alkanolamide, especially a melt of a balanced composition which has a softening point chosen to provide best treating effects in normal dryer operations.

3,696,035

WELL TREATMENTS WITH THICKENED AQUEOUS ALCOHOL MIXTURES

Kenneth H. Nimerick, Tulsa, Okla., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of application Ser. No. 666,853, Sept. 11, 1967. This application Nov. 4, 1970, Ser. No. 86,925

Int. Cl. E21b *43/25*, *43/26*

U.S. Cl. 252—8.55 R 7 Claims

A novel thickened liquid composition and method of treating wells is described herein. The liquid composition comprises an aqueous-alcohol mixture thickened with a cellulose derivative thickener and containing as an internal breaker a periodic acid and/or a water soluble salt thereof.

3,696,036

ORGANIC COMPOSITIONS CONTAINING TETRA-OCTYL-(DIMETHYL-AMINO) METHYLENE DIPHOSPHONATE AS ANTIWEAR AGENT

Axel Klaus Commichau, Hamburg-Rissen, Germany, assignor to Mobil Oil Corporation, New York, N.Y.

No Drawing. Filed Apr. 21, 1970, Ser. No. 30,573

Int. Cl. C10m *1/46*, *5/24*

U.S. Cl. 252—49.9 12 Claims

Organic compositions are provided containing tetra-octyl-(dimethyl-amino) methylene diphosphonate, as an antiwear agent. Particularly contemplated are mineral oil-

based organic compositions such as fuel oils, lubricating oils and greases containing anti-wear amounts of tetra-octyl-(dimethyl-amino) methylene diphosphonate.

3,696,037
ANHYDROUS ELECTROLYTE FOR ELECTROLYTIC CAPACITORS

Bengt Åke Lagercrantz, Stocksund, and Kåre Andersen, Stockholm, Sweden, assignors to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

No Drawing. Filed June 10, 1970, Ser. No. 45,209
Claims priority, application Sweden, June 19, 1969, 8,797/69
Int. Cl. H01g *9/02*
U.S. Cl. 252—62.2 **2 Claims**

Electrolyte for electrolytic capacitor, consisting of a solution of phthalic acid in an amide, the phthalic acid being at least partly neutralized with an amine.

3,696,038
PROCESS FOR PREPARING SINGLE CRYSTALLINE Ag_3AsS_3 AND Ag_3SbS_3 AND SOLID SOLUTIONS THEREOF

Philip Hywel Davies, 108 Leigh Sinton Road; Maurice Vernon Hobden, 6 Cockshot Road; Kenneth Fraser Hulme, 29 Whitborn Close; and Oliver Jones, 17 Denison Close, all of Malvern, England

Continuation-in-part of application Ser. No. 689,175, Dec. 8, 1967. This application Sept. 14, 1970, Ser. No. 71,666
Claims priority, application Great Britain, Dec. 9, 1966, 55,201/66
Int. Cl. C01b *27/00, 29/00;* **B01j** *17/20;* **H03f** *7/00*
U.S. Cl. 252—62.9 **5 Claims**

The substances proustite Ag_3AsS_3 and pyrargyrite Ag_3SbS_3 and solid solutions of the two are useful non-linear materials and have applications in non-linear devices. They occur in nature but in a small and optically imperfect form. However, they may be prepared having a good optical quality and a large size by synthetic growth from the melt such as by Stockbarger growth, provided that steps are taken to alleviate the problem of cellular growth. The materials grown in such a form may be used not only in non-linear devices but also in linear devices such as polarising prisms.

3,696,039
PROCESS FOR THE PRODUCTION OF FERROMAGNETIC CHROMIUM DIOXIDE

Fritz Rodi, Kaldenhausen, Germany, assignor to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Apr. 28, 1970, Ser. No. 32,648
Claims priority, application Germany, May 2, 1969, P 17 22 409.0
Int. Cl. C01g *37/02*
U.S. Cl. 252—62.51 **9 Claims**

A method for the production of ferromagnetic chromium dioxide by dehydrating and tampering chromium oxide hydrate green which is obtained by reducing a chromium (VI)-solution with a reducing organic substance at a temperature of from 300° C. to 400° C. and at a pressure of from 250 to 350 kg./cm.². The obtained finely divided chromium oxide in which the average oxidation state of the chromium is in the range of from 3 to 4 is heated together with an oxidising agent under hydrothermal conditions at a temperature of from 50° C. to 400° C. and at a pressure of from 50 to 500 kg./cm.², optionally in the presence of a substance, which acts as a modifier.

3,696,040
COMPOSITION FOR REMOVAL OF CALCIUM SULFATE DEPOSITS

Frank H. Mayo, Breauxbridge, La., assignor to Champion Chemicals, Inc., Houston, Tex.

No Drawing. Continuation-in-part of abandoned application Ser. No. 775,129, Nov. 12, 1968. This application Jan. 16, 1970, Ser. No. 3,486
Int. Cl. C02b *5/06*
U.S. Cl. 252—87 **7 Claims**

A composition of matter suitable for removal of mineral deposits such as gypsum and the like comprising a salt formed from a base and an organic acid having from 2 to 12 carbon atoms inclusive and water. In the preferred case, the acid is one having a dissociation constant of $>1.0\times10^{-5}$ and may be for example glycolic acid. The composition may further contain an acid or a base and a surfactant.

3,696,041
DISHWASHING COMPOSITIONS

Frederick William Gray, Summit, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

No Drawing. Filed May 28, 1970, Ser. No. 41,551
Int. Cl. C11d *7/56*
U.S. Cl. 252—99 **6 Claims**

A cleaning composition particularly adapted for washing dishes, glasses and silverware in mechanical devices such as automatic dishwashers and capable of inhibiting overglaze attack containing as an essential ingredient aluminum chlorhydroxide.

3,696,042
PROCESS FOR SIMULTANEOUSLY CLEANING WINDSHIELDS AND CONDITIONING WIPER BLADES

Sheldon A. Wright, Morton Grove, Ill., assignor to STP Corporation

No Drawing. Filed Sept. 24, 1970, Ser. No. 75,274
Int. Cl. C11d *1/66*
U.S. Cl. 252—153 **6 Claims**

A process and composition useful for simultaneously cleaning vehicle windshields and conditioning rubber windshield wiper blades. The composition includes a major proportion of a lower alcohol cleaning agent, such as methyl alcohol, and a minor proportion of diethylene glycol, which not only acts as a freezing point depressant, but also acts to treat the rubber wiper blades so as to renew old blades and lengthen the life expectancy of new wiper blades.

3,696,043
CLEANING COMPOSITION FOR GLASS AND REFLECTIVE SURFACES

Robert G. Labarge, Syamalarao Evani, and Alden W. Hanson, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Oct. 21, 1970, Ser. No. 82,815
Int. Cl. C09k *3/18;* **C11d** *3/30*
U.S. Cl. 252—153 **8 Claims**

The incorporation of a water soluble polymeric salt, such as the neutralization product of diethanol amine with an equimolar copolymer of styrene-maleic acid, in an aqueous surfactant cleaning formulation for glass and reflective surfaces improves the formulations by decreasing the streaking and enhancing the antifog characteristics.

3,696,044
SEQUESTRANT COMPOSITIONS

Thomas F. Rutledge, Wilmington, Del., assignor to Atlas Chemical Industries, Inc., Wilmington, Del.

No Drawing. Filed July 2, 1970, Ser. No. 52,088
Int. Cl. C02b *5/06;* **C23g** *1/02*
U.S. Cl. 252—180 **10 Claims**

Disclosed are sequestrant compositions comprising a mixture of (1) a compound selected from the group con-

sisting of citric acid, tartaric acid, polyhydroxy monocarboxylic acids containing from 6 to 8 carbon atoms, and the water soluble salts of said acids and (2) a compound selected from the group consisting of polyhydroxy dicarboxylic acids containing from 5 to 8 carbon atoms and polyhydroxy monocarboxylic ketoacids containing from 6 to 8 carbon atoms and the water-soluble salts of said acids.

3,696,045

Patent Not Issued For This Number

3,696,046

NITRO OR NITROSO AROMATIC COMPOSITION

Donald M. Fenton, 2861 Alden Place, Anaheim, Calif. 92806

No Drawing. Filed Aug. 20, 1970, Ser. No. 65,720

Int. Cl. C07b *3/00;* **C07c** *79/10*

U.S. Cl. 252—186 **10 Claims**

The oxidation of organic compounds using a nitro or nitroso aromatic as an oxidant in the presence of a non-aqueous reaction medium containing a ruthenium or rhenium catalyst and alkaline conditions is disclosed. Preferably, the catalytically active metal is in complex association with a biphyllic ligand. Examples of oxidizable substrates are aryl and alkyl substituted aromatics; condensed ring aromatics; phenols; olefins; alkynes; saturated hydrocarbyl alcohols, ketones, aldehydes, halides, ethers, amines and carboxylic acids and halides and alkyl esters thereof; and heterocyclic amines. The oxidation is performed under relatively mild conditions including temperatures from 50° to 350° C. and pressures from 0.1 to 1000 atmospheres.

3,696,047

CHEMICAL REDUCING AGENTS OF ENHANCED HYDROCARBON SOLUBILITY

Gunner E. Nelson, Baton Rouge, La., assignor to Ethyl Corporation, New York, N.Y.

No Drawing. Filed Oct. 15, 1970, Ser. No. 81,164

Int. Cl. C09k *3/00*

U.S. Cl. 252—188 **23 Claims**

The hydrocarbon solubility of alkali metal aluminum dialkyl dihydrides, chemical reducing agents, is enhanced by including in the solution a small quantity of a suitable innocuous Lewis base.

3,696,048

CORROSION INHIBITING COMPOSITION AND USE THEREOF

Rudolf H. Hausler, Arlington Heights, and Leonard A. Goeller, Des Plaines, Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Filed Apr. 6, 1970, Ser. No. 26,077

Int. Cl. C23f *11/00*

U.S. Cl. 252—392 **9 Claims**

A corrosion inhibiting composition of (1) a salt of dicarboxylic acid and aliphatic amine and (2) a solvating compound containing at least one hydroxyl. The composition is incorporated in any substrate which contacts metal and serves to inhibit corrosion of the metal.

3,696,049

CORROSION INHIBITING COMPOSITION AND USE THEREOF

Rudolf H. Hausler, Arlington Heights, and Leonard A. Goeller, Des Plaines, Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Filed Apr. 6, 1970, Ser. No. 26,078

Int. Cl. C23f *11/00*

U.S. Cl. 252—392 **10 Claims**

A corrosion inhibiting composition of (1) a salt of dicarboxylic acid and aliphatic amine and (2) polymeric reaction product of an epihalohydrin compound and aliphatic amine. The composition is incorporated in any substrate which contacts metal and serves to inhibit corrosion of the metal.

3,696,050

POLYMERIZATION INHIBITORS FOR VINYL MONOMERS AND UNSATURATED POLYESTERS

Arthur P. Werts III, and John E. Besser, Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Aug. 3, 1970, Ser. No. 60,638

Int. Cl. C08f *45/60*

U.S. Cl. 252—403 **3 Claims**

Undesired polymerization of vinyl monomers, either in storage or while being processed, such as by distillation of the monomeric material, is prevented by adding to the monomer as a polymerization inhibitor small amounts of an N-substituted p-aminophenol, either alone or in combination with a phenol, substituted phenol, dihydric phenol, or substituted dihydric phenol, whereby a synergistic effect is realized. Preferably, the N-substituted p-aminophenol is either N-butyl p-aminophenol or N-cyclohexyl p-aminophenol. These inhibitors do not interfere in any way with subsequent processing of the stabilized monomer into the ultimate product.

3,696,051

METHOD OF REMOVING OIL FROM THE SURFACE OF WATER AND COMPOSITION THEREFOR

Robert J. McGuire, Monroeville, Edward Mitchell, Valencia, and John P. Pellegrini, Jr., Pittsburgh, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

No Drawing. Filed Oct. 1, 1970, Ser. No. 77,364

Int. Cl. F23d *3/08, 21/00*

U.S. Cl. 252—425.5 **11 Claims**

Oils floating on the surface of open bodies of water can be removed by burning them in situ in the presence of an oleophilic particulate material such as vermiculite which has been treated with a metallo cyclopentadienyl compound such as dicyclopentadienyliron.

3,696,052

CATALYST FOR EPOXIDATION PROCESS

John F. Harrod, Mont St. Hilaire, Quebec, Allan R. Knight, Petrolia, Ontario, and John S. McIntyre, Sarnia, Ontario, Canada, assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Continuation-in-part of application Ser. No. 4,037, Jan. 19, 1970, now Patent No. 3,654,317. This application June 2, 1971, Ser. No. 149,377

Int. Cl. C07d *1/08, 1/12*

U.S. Cl. 252—428 **6 Claims**

A process for producing epoxides comprising oxidizing in the liquid phase an olefin via an organic hydroperoxide

in the presence of at least one of $Mo(CO)_6$ and $W(CO)_6$ as a catalyst, wherein a solution of the olefin and the catalyst have been heated to a temperature of from 50° C. to the reflux temperature of the olefin for at least 5 minutes prior to the epoxidation. The resulting activated catalyst allows epoxidation reactions at lower temperatures or shorter contact times, thereby lowering hydroperoxide losses through decomposition.

3,696,053

POROUS SILICA CONTAINING FOREIGN IONS AND METHOD FOR PREPARATION FOR SAME

Madeleine A. Le Page, Paris, Raymond Beau, Massy, and Jacques Duchene, Maison-Alfort, France, assignors to Produits Chimiques Pechiney-Saint-Gobain, Neuilly-sur-Seine, France

No Drawing. Continuation-in-part of application Ser. No. 610,786, Jan. 23, 1967. This application Mar. 18, 1970, Ser. No. 20,850

Int. Cl. B01j *11/82, 11/36*

U.S. Cl. 252—437 **20 Claims**

This invention is addressed to silica gel grains containing foreign ions including an alkali metal cation, wherein the alkali metal is selected from a group consisting of lithium, sodium, potassium and cesium, along with an acidic anion selected from a group consisting of sulfate, phosphate, chloride, bromide and iodide anions, and to methods for their preparation.

3,696,054

PAINT COMPOSITIONS

John Allen Saunders, Teddington, England, assignor to The Research Association of British Paint, Colour & Varnish Manufacturers, Teddington, England

No Drawing. Filed Apr. 13, 1970, Ser. No. 28,154

Claims priority, application Great Britain, Apr. 18, 1969, 20,041/69

Int. Cl. H01b *1/06;* **B44c** *1/00;* **C01b** *31/00*

U.S. Cl. 252—511 **7 Claims**

This invention discloses paint compositions and the preparation of paint compositions which can be spread and dried to give electrically conductive films. The paint compositions contain colloidal carbon particles. The graphite is wet ground and this is found to give a particular shape to the resulting particles and a particle size distribution such that the dried conductive films have a low resistivity in the range of about 0.1 to 10 ohms/square, Such films produce useful heat outputs when relatively low voltage currents are passed through them and so they are suitable for application to the walls of a building for use as a central heating system.

3,696,055

Patent Not Issued For This Number

3,696,056

TERNARY FOAM CONTROL SYSTEMS WITH AMINES OR AMIDES AND DETERGENT COMPOSITIONS CONTAINING SAME

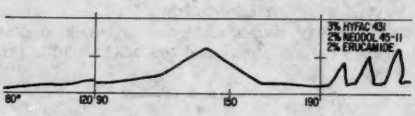
Jack Thomas Inamorato, Westfield, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Continuation-in-part of application Ser. No. 41,308, which is a continuation-in-part of applications Ser. No. 41,359, and Ser. No. 41,601, all May 28, 1970. This application May 28, 1970, Ser. No. 41,392

Int. Cl. B01d *19/04;* **C11d** *3/065, 3/26*

U.S. Cl. 252—525 **32 Claims**

A detergent composition having excellent foam control at low and high temperatures is disclosed, as well as a ternary composition for accomplishing this result when added to a detergent system. The controlled suds are provided by a synergistic mixture of a fatty acid, a polyethoxylated linear alcohol and a high molecular weight amide or a primary, secondary or tertiary amine.



3,696,057

ANTI-FOAMING COMPOSITIONS AND CLEANING COMPOSITIONS CONTAINING THEM

Hans-Joachim Schussler, Dusseldorf-Holthausen, and Rolf Scharf, Monheim, Germany, assignors to Henkel & Cie G.m.b.H., Dusseldorf-Holthausen, Germany

No Drawing. Filed Aug. 20, 1970, Ser. No. 65,721

Claims priority, application Germany, Sept. 3, 1969, P 19 44 569.3

Int. Cl. C11d *7/18*

U.S. Cl. 252—544 **10 Claims**

A synergistic anti-foaming composition consisting of a mixture of (a) a reaction product of ethylenediamine with ethylene oxide and propylene oxide in any sequence, having a turbidity point of from 10° C. to 35° C., and (b) a fatty component selected from the group consisting of fatty alcohols having 12 to 18 carbon atoms and water-insoluble reaction products thereof with ethylene oxide; said components (a) and (b) being present in a proportion by weight selected from the group consisting of 5:1 to 20:1 and 1:5 to 1:20, as well as aqueous cleaning compositions containing from 0.1 to 1 gm. per liter of said anti-foaming composition.

3,696,058

PROCESS FOR POLYMER RECOVERY

John Teti, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed June 10, 1971, Ser. No. 151,900

Int. Cl. C08f *47/24;* **C08g** *53/22*

U.S. Cl. 260—2.3 **5 Claims**

A process for recovering solid scrap thermoplastic polymer such as polyamides, polyesters, polyacrylonitriles and polyacetals by dissolving the polymer in hexafluoroisopropanol, filtering the polymer solution, mixing the polymer solution with an excess of water at 60° to 100° C. and separating the precipitated polymer from the aqueous mixture.

3,696,059

PROCESS FOR PREPARING OLEFIN POLYMER FOAMS

Kirokuro Hosoda, Kanagawa-ken, Naonori Shiina and Yoshio Kadowaki, Tokyo, and Hiroyuki Nakae, Kanagawa-ken, Japan, assignors to The Furukawa Electric Company Limited, Tokyo, Japan

Filed June 5, 1969, Ser. No. 830,816

Claims priority, application Japan, June 13, 1968, 43/40,794

Int. Cl. C08f *47/10, 29/12;* **C08d** *13/10*

U.S. Cl. 260—2.5 HA **25 Claims**

This invention provides a process for preparing olefin polymer foams by heating to cause foaming of a composition consisting of olefin polymers, polybutadiene and a foaming agent. The product of this invention is a white and uniform foam including a number of independent cells and the product olefin polymer foam combines the excellent characteristics of both the olefin polymer and the polybutadiene.

3,696,060

PRODUCTION OF FOAMABLE RESINS

Patrick V. Burt, Newport, England, assignor to Monsanto Chemicals Limited, London, England

No Drawing. Continuation-in-part of application Ser. No. 700,361, Jan. 25, 1968, which is a continuation-in-part of application Ser. No. 418,319, Dec. 14, 1964. This application Apr. 9, 1970, Ser. No. 27,148
Claims priority, application Great Britain, Dec. 13, 1963, 49,234/63
Int. Cl. C08j *1/26*
U.S. Cl. 260—2.5 B 7 Claims

A suspension polymerization process for preparing foamable beads of a thermoplastic styrene polymer by conducting the polymerization in the presence of 65–95% of the total amount of the blowing agent until the stage of 45% conversion to polymer is attained, adding the remainder of the blowing agent during the stage of 45–85% conversion, and continuing the polymerization. The late add of blowing agent is made over a period of time during which about 20–30% conversion takes place so that at least a portion of the blowing agent is added during the stage of 65–75% conversion.

3,696,061

METHOD FOR FORMING FLOWABLE POWDER PROCESSABLE INTO MICROPOROUS OBJECT

James Quinn Selsor, Franklin Lakes, N.J., Edward Wayne Turner, Deerfield, Mass., and Bruce Saul Goldberg, Clifton, N.J., assignors to Amerace Esna Corporation, New York, N.Y.

Filed Apr. 13, 1970, Ser. No. 27,842
Int. Cl. C08f *47/08, 29/18, 45/34*
U.S. Cl. 260—2.5 M 18 Claims

Method for forming a free flowing powder blend of vinyl resins and silica by adding a volatile organic solvent to the blend at a rate below the maximum absorption rate of the silica and thereafter adding non-solvent to the mix at a rate sufficient to prevent release of the absorbed solvent.

3,696,062

COMPOSITIONS CONTAINING AMORPHOUS 1,2-POLYBUTADIENE

Jean Lesage, Le Vesinet, and Francois Dawans, Bougival, France, assignors to Institut Francais du Petrole, des Carburants et Lubrifiants, Rueil Malmaison (Hauts-de-Seine), France

No Drawing. Filed Oct. 8, 1970, Ser. No. 79,286
Claims priority, application France, Oct. 21, 1969, 6936148
Int. Cl. C08c *9/04*
U.S. Cl. 260—5 6 Claims

The new compositions consisting of 50–95% by weight of natural rubber and 5–50% by weight of amorphous 1,2-polybutadiene may be subjected to vulcanization treatments, thus resulting in vulcanizates of improved mechanical properties and stability.

3,696,063

THERMOSETTING REFLOW RESINS OF COPOLYMERS OF ALKYL METHACRYLATES

Ludwig Mott, Leverkusen, Richard Muller, Bergisch-Neukirchen, Karl Dinges, Odenthal, and Heinz-Walter Krauss, Leverkusen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed May 13, 1970, Ser. No. 37,051
Claims priority, application Germany, May 23, 1969, P 19 26 563.5
Int. Cl. C09d *3/14, 3/80*
U.S. Cl. 260—17 R 2 Claims

Solvent containing spontaneously crosslinking coating agent comprising a copolymer of an alkyl ester of methacrylic acid, an alkyl ester of acrylic acid and N-hydroxymethyl-acrylamide or methacrylamide and/or an alkyl ether thereof, said copolymer optionally containing an α,β-unsaturated carboxylic acid amide and/or an α,β-unsaturated monocarboxylic or dicarboxylic acid.

3,696,064

STABLE PHENOLIC ADHESIVE MIX

Jerry Peter Re, Eugene, Oreg., assignor to Borden, Inc., New York, N.Y.

No Drawing. Filed Nov. 9, 1970, Ser. No. 88,126
Int. Cl. C08g *51/14*
U.S. Cl. 260—17.2 11 Claims

In the art of preparing phenolic adhesive mixes by mixing a phenolic resin with conventional adhesive addities which include an extender and an amylaceous material, the improvement comprising heating said mix to a temperature in the range of 30–105° C. for a period of time sufficient to solubilize said amylaceous material for the purpose of improving stability of the adhesive mix.

3,696,065

REMOISTENING ADHESIVE COMPOSITIONS

Paul Hoffman, Gainesville, and Herbert W. Craig, Palatka, Fla., assignors to Hudson Pulp & Paper Corp., New York, N.Y.

No Drawing. Filed Mar. 30, 1970, Ser. No. 25,573
Int. Cl. C08f *15/00*
U.S. Cl. 260—17.4 ST 3 Claims

Remoistening adhesive compositions having improved quick tack and comprising a starch substantially free of amylose and at least 0.25 percent by weight of a copolymer of vinyl pyrrolidone and vinyl acetate.

3,696,066

PLASTICIZED COMPOSITIONS

Ross E. Morris, Vallejo, Calif., assignor to the United States of America as represented by the Secretary of the Navy

No Drawing. Continuation-in-part of application Ser. No. 822,696, May 7, 1969. This application Jan. 8, 1971, Ser. No. 105,131
Int. Cl. C08c *11/66, 11/72;* C08d *11/02*
U.S. Cl. 260—23.7 H 3 Claims

A rubber having a plasticizer that exceeds the solubility limit of the plasticizer in the rubber. The plasticizer is selected so that it will plasticize the paint and since it exceeds the solubility limit of the plasticizer in the rubber, it will gradually migrate to the surface of the rubber and act as a softening agent for the paint and maintain the paint in a soft or unhardened condition.

3,696,067

VINYLIDENE CHLORIDE COPOLYMER LATEX COATING COMPOSITION

Alex Trofimow, 16 Stetson St., Brookline, Mass. 02146

Filed Nov. 8, 1971, Ser. No. 196,444
Int. Cl. C08f *45/52*
U.S. Cl. 260—28.5 D 5 Claims

Improved barrier coating compositions of the vinylidene chloride copolymer latex type are prepared by conducting the aqueous polymerization of vinylidene chloride and other comonomers in the presence of a small amount of emulsified paraffin wax.

3,696,068

ORGANOSILOXANE ELASTOMERS

Charles Edward Creamer, Ridgefield, Conn., assignor to Union Carbide Corporation, New York, N.Y.

No Drawing. Filed May 18, 1970, Ser. No. 38,475
Int. Cl. C08g *47/06, 51/50;* C08f *35/02*
U.S. Cl. 260—29.1 B 30 Claims

Crosslinked silicone elastomers; vinyl containing linear organosiloxane copolymer fluids said vinyl radicals con-

stituting from about 5 to about 10 weight percent of the copolymer fluids; and heat-curable silicone gumstock compositions comprising (1) a crosslinkable diorganopolysiloxane gum containing vinylsiloxy units and (2) vinyl containing linear organosiloxane copolymer fluids said vinyl radicals constituting from about 3 to about 17 weight percent of the copolymer fluids, for use in the production of said silicone elastomers.

3,696,069

SYNERGISTIC BLENDS OF MODIFIED POLYOLEFINS AND UNMODIFIED POLYOLEFINS

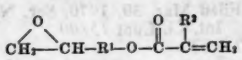
Albert Schrage, East Orange, and Arnold B. Finestone, Woodcliff Lake, N.J., assignors to Dart Industries Inc., Los Angeles, Calif.

No Drawing. Filed May 26, 1971, Ser. No. 147,187

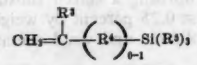
Int. Cl. C08g *45/04*

U.S. Cl. 260—41 R 9 Claims

Synergistic effects in certain physical properties have been found in blends of unmodified polyolefins with polyolefins which have been modified by reaction with polymerizable compounds defined by



and/or



in the presence of an organic peroxide. The blends are particularly suitable in applications requiring good adhesion to polar surfaces such as metal and glass.

3,696,070

Patent Not Issued For This Number

3,696,071

MANUFACTURE OF POLYETHYLENE TEREPHTHALATE

Brian A. Dementi, Richmond, Va., assignor to Allied Chemical Corporation, New York, N.Y.

No Drawing. Filed July 30, 1970, Ser. No. 59,685

Int. Cl. C08g *17/015, 39/04*

U.S. Cl. 260—45.75 C 9 Claims

The preparation of linear high-molecular weight, film and fiber forming polyester and copolyesters wherein the reaction of polycarboxylic acid with a polyol takes place in the presence of cuprous and cupric inorganic salts to improve processing and end product characteristics.

3,696,072

LIGHT-SENSITIVE POLYMERS

George A. Reynolds, Thomas M. Laakso, Douglas G. Borden, and Jack L. R. Williams, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 854,303, Aug. 29, 1969. This application Jan. 16, 1970, Ser. No. 3,536

Int. Cl. C08f *27/00*; C08g *43/00*

U.S. Cl. 260—47 EP 17 Claims

Novel light-sensitive polymers contain as the light-sensitive moiety a side chain which contains two ethylenically unsaturated groups conjugated to each other through an arylene group. Photosensitive compositions and elements prepared with these polymers are useful in the preparation of photomechanical images such as photoresists and lithographic printing plates.

3,696,073

Patent Not Issued For This Number

3,696,074

COPOLYAMIDE FROM (a) DODECAMETHYLENE DIAMINE, (b) HEXAMETHYLENE DIAMINE, (c) TEREPHTHALIC ACID AND (d) ADIPIC ACID

Yoshizo Tsuda and Akinori Yamamoto, Otsu, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Mar. 24, 1970, Ser. No. 22,273

Claims priority, application Japan, Mar. 25, 1969, 44/22,072

Int. Cl. C08g *20/20*

U.S. Cl. 260—78 R 7 Claims

A novel copolyamide useful as a textile fiber is synthesized from (a) dodecamethylenediamine, (b) hexamethylenediamine, (c) terephthalic acid and (d) adipic acid.

3,696,075

LACTAM POLYMERIZATION WITH DIACYL METHANE INITIATORS

Markus Matzner, Edison, and James E. McGrath, Somerville, N.J., and Robert M. Manyik, St. Albans, and Wellington E. Walker, Charleston, W. Va., assignors to Union Carbide Corporation, New York, N.Y.

No Drawing. Filed Apr. 29, 1970, Ser. No. 33,077

Int. Cl. C08g *20/18*

U.S. Cl. 260—78 L 5 Claims

Substituted diacyl methanes are utilized as polymerization initiators or activators with alkaline catalysts in the anionic polymerization of lactam monomers so as to provide for a rapid polymerization process with an initiator having a low order of toxicity.

3,696,076

FORMATION OF CAST FILMS OF AROMATIC POLYAMIDES

Elliot A. Vogelfanger, Edison, N.J., assignor to Celanese Corporation, New York, N.Y.

No Drawing. Filed May 22, 1970, Ser. No. 39,869

The portion of the term of the patent subsequent to July 25, 1989, has been disclaimed

Int. Cl. C08g *20/20*

U.S. Cl. 260—78 R 11 Claims

Aromatic diamines and aromatic diacid halides are reacted to form high-molecular weight polyamides in a mutual solvent system comprising anhydrous gamma-butyrolactone and at least one amine acid acceptor, a dipolar solvent is added, the mixture is neutralized with a base, filtered and the mixture cast directly onto a substrate and cured to form clear films.

3,696,077

AROMATIC POLYAMIDE-IMIDES SOLUBLE IN PHENOLIC SOLVENTS AND PROCESS FOR PRODUCING SAME

Munehiko Suzuki, Yokosuka, Etsuo Hosokawa, Yokohama, Misao Waki, Kawasaki, and Masatada Fukushima, Yokohama, Japan, assignors to Showa Electric Wire & Cable Co., Ltd., Kawasaki-shi, Japan

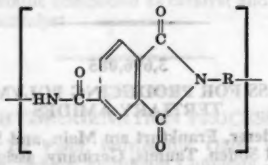
Filed June 11, 1970, Ser. No. 45,346

Claims priority, application Japan, June 13, 1969, 44/47,125

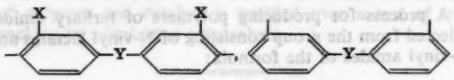
Int. Cl. C08g *20/32*

U.S. Cl. 260—78 TF 15 Claims

A novel aromatic polyamide-imide consists essentially of the recurring unit represented by the formula:



wherein R is a divalent radical having benzene unsaturation, the two linkages of which are attached to different carbon atoms of the benzene ring, at least 30 mole percent of R being at least one member selected from the group consisting of divalent radicals represented by the formulas:



and

wherein X is at least one member selected from the group consisting of lower alkyl groups, lower alkoxy groups, halogen atoms, —COOH, —OH and —SO_3H; Y is at least one member selected from the group consisting of —CH_2—, —O—, —S—, —SO_2— and

and Z is a lower alkyl group, said polyamide-imide having an inherent viscosity of at least 0.1 as measured in m-cresol at 30° C. at a concentration of 0.5 g./100 ml. Said aromatic polyamide-imide can directly be dissolved in a phenolic solvent, and the resulting solution may be used as a varnish for the formation of a heat-resistant film in various fields, such as magnet wire.

3,696,078

ANTISTATIC NYLON FILAMENTS

Andrew I. Smith and Roland J. Bryan, Jr., Pensacola, Fla., assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Aug. 13, 1970, Ser. No. 63,664

Int. Cl. C08g *20/38*

U.S. Cl. 260—78 S 7 Claims

The antistatic property of nylon filaments containing from about 2% to 15% by weight of a poly(alkylene ether, polyethoxylated hydrogenated castor oil, or polyethoxylated distearylamine dispersed therein) is greatly improved by also dispersing into the nylon from 0.5 to 5% by weight of a phosphonium bromide of the formula

where R′ and each R are hydrocarbon radicals.

3,696,079

PROCESS FOR THE PREPARATION OF POLYVINYL CHLORIDE POLYMERIZATES SUITABLE FOR VINYL PASTES

Jobst Possberg, 65 Erkesstrasse, 5 Cologne, Germany; Kai Rostock, 65 Erkesstrasse, 5 Cologne-Longerich, Germany; Eligius Nickl, 87 Lindacherstrasse, 8263 Burghausen, Germany; and Otmar Zajicek and Helmut Klapp, both of 99 Alte Romerstrasse, 5 Cologne 71, Germany

No Drawing. Filed May 27, 1971, Ser. No. 147,657

Claims priority, application Germany, May 27, 1970, P 20 26 023.5

Int. Cl. C08f *3/30, 15/30, 47/02*

U.S. Cl. 260—78.5 CL 2 Claims

A process for the preparation of vinyl chloride polymerizates suitable for vinyl pastes which consists essentially of applying a thin layer of an aqueous vinyl chloride polymerizate dispersion prepared by polymerization of a stable, aqueous monomeric dispersion of vinyl chloride containing up to 20% by weight of ethylenically-unsaturated monomers copolymerizable with vinyl chloride prehomogenized in the presence of emulsifiers and oil-soluble catalysts to a roller drier by means of an application roller in contact with said aqueous polymerizate dispersion, drying said aqueous polymerizate dispersion in said thin layer on said roller drier at a temperature between about 90° C. to 110° C. to a moisture content of from 3% to 12% by weight, removing said partially dried vinyl chloride polymerizate powder from said drier roller, grinding said powder in an air stream at a temperature between 20° C.–40° C. until said powder has a moisture content of 0.3% by weight maximum and recovering a powdered vinyl chloride polymerizate suitable for vinyl pastes.

3,696,080

CYCLOBUTENE HOMOPOLYMERS AND COPOLYMERS

David M. Gale, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

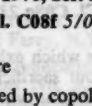
No Drawing. Continuation-in-part of application Ser. No. 828,788, May 28, 1969, which is a continuation-in-part of application Ser. No. 599,730, Dec. 7, 1966. This application Sept. 8, 1970, Ser. No. 70,565

Int. Cl. C08f *5/00, 17/00*

U.S. Cl. 260—78.5 N 31 Claims

Described herein are

(1) copolymers formed by copolymerization of
(a) compounds of the formula



where the groups R^1, R^2, R^3, R^4, R^5 represent hydrogen or a variety of other substitutents and R^6 is acetoxy, phenyl, lower alkoxy, chloro, cyano or its common analogs such as carboxyl, alkoxycarbonyl, carbamoyl or N-alkylcarbamoyl with

(b) unsaturated or strained ring comonomers,

(2) alkoxycyclobutenes,

(3) homopolymers and copolymers of alkoxycyclobutenes, and

(4) a process for preparing the alkoxycyclobutenes.

The homopolymers and copolymers are useful as molded objects, films or fibers.

3,696,081

HEXAFLUOROISOPROPANOL ACRYLAMIDE

Elemer Domba, Olympia Fields, and Thaddeus A. Krolikiewicz, Westchester, Ill., assignors to Nalco Chemical Company, Chicago, Ill.

No Drawing. Continuation-in-part of application Ser. No. 828,786, May 28, 1967. This application Sept. 22, 1970, Ser. No. 74,510

Int. Cl. C08f *3/90, 15/02*

U.S. Cl. 260—78.5 BB **4 Claims**

The homopolymers and polymers of the new compound hexafluoroisopropanol acrylamide.

3,696,082

VINYLIDENE CHLORIDE-LONG CHAIN ALKYL ESTER POLYMER

David R. Smith, Decatur, Ill., assignor to A. E. Staley Manufacturing Company, Decatur, Ill.

No Drawing. Filed June 3, 1970, Ser. No. 43,227

Int. Cl. C08f *15/40*

U.S. Cl. 260—80.8 **11 Claims**

Vinylidene chloride emulsion copolymers in which 89–95 percent of the monomers consists of 88–94 parts vinylidene chloride and 1–5 parts C_{10-24} alkyl ester of alpha, beta-ethylenically unsaturated carboxylic acids. The copolymer emulsions yield films, especially coatings on glassine paper, having valuable oxygen-barrier, heat-seal, and slip characteristics.

3,696,083

POLYMERCAPTAN MODIFIER VINYL HALIDE POLYMERS

Jesse C. H. Hwa, Stamford, Conn., assignor to Stauffer Chemical Company, New York, N.Y.

No Drawing. Continuation of application Ser. No. 664,903, Sept. 1, 1967. This application Oct. 27, 1970, Ser. No. 84,470

Int. Cl. C08g *23/00*

U.S. Cl. 260—79 **12 Claims**

Vinyl halide polymers which exhibit improved processing characteristics without sacrificing physical properties are prepared by polymerizing vinyl halide monomer in the presence of an aliphatic polymercaptan having at least three mercaptan groups in an amount based on —SH equivalence of from about 0.00015 to about 0.05 equivalence —SH per mole of monomeric material. The monomer is preferably 100% vinyl chloride though mixtures containing a predominant amount of vinyl chloride with minor amounts of other ethylenically unsaturated monomers can also be used.

3,696,084

PROCESS FOR REPLACING CHLORIDE GROUPS IN POLYVINYL CHLORIDE

Ronnie D. Gordon, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.

No Drawing. Filed Sept. 17, 1970, Ser. No. 73,249

Int. Cl. C08f *27/06, 27/08, 3/30*

U.S. Cl. 260—79.3 R **9 Claims**

A portion of the chloride ions in polyvinyl chloride is replaced by a different nucleophylic functional group by heating the polyvinyl chloride polymer and a material containing the replacing functional group in the presence of a quaternary phosphonium or arsonium salt catalyst at a temperature of from about 25° C. to about 200° C., with or without a solvent, for a period from about two hours to about forty-eight hours.

3,696,085

PROCESS FOR PRODUCING POLYMERS OF TERTIARY AMIDES

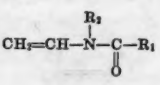
Michael Lederer, Frankfurt am Main, and Sommer Siegfried, Bad Soden, Taunus, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Continuation of application Ser. No. 822,044, May 5, 1969. This application Sept. 4, 1970, Ser. No. 69,991

Int. Cl. C08f *1/11, 3/90, 15/00*

U.S. Cl. 260—80.3 N **5 Claims**

A process for producing polymers of tertiary amides selected from the group consisting of N-vinyl lactams and N-vinyl amides of the formula:



in which R_1 represents a member selected from the group consisting of hydrogen and an aliphatic group containing 1 to 20 carbon atoms and R_2 represents an aliphatic group containing 1 to 20 carbon atoms is disclosed. The polymers may be homopolymers or copolymers of the tertiary amides with up to 50 percent calculated on the weight of the tertiary amides of monoolefinically unsaturated comonomers. Polymerization may be effected at a temperature of 0° to 150° C. in the presence of 0.001 to 5% by weight, based on the weight of monomers, of a free radical polymerization catalyst and in the presence of a saturated aliphatic hydrocarbon containing 3 to 20 carbon atoms. The polymers obtained are in pulverulent form and their aqueous solutions exhibit relatively low surface tensions.

3,696,086

PROCESS FOR PREPARING COPOLYMERS OF ETHYLENE AND ALPHA-OLEFINS

Joseph Wagensommer, Westfield, N.J., assignor to Esso Research and Engineering Company

No Drawing. Filed July 28, 1970, Ser. No. 59,038

Int. Cl. C08f *15/40*

U.S. Cl. 260—80.78 **19 Claims**

This invention is directed to a novel process for preparing copolymers of ethylene and certain alpha olefins (including terpolymers with dienes) by reaction in the presence of vanadium or titanium catalysts together with aluminum cocatalysts.

3,696,087

PROCESS FOR THE DEFINED INCREASE OF THE MOLECULAR WEIGHT OF SOLID, UNSATURATED ELASTOMERS

Karl-Heinz Nordsiek, Marl, Germany, assignor to Chemische Werke Huls, Aktiengesellschaft, Marl, Germany

No Drawing. Filed May 22, 1970, Ser. No. 39,862

Claims priority, application Germany, May 23, 1969, P 19 26 322.0

Int. Cl. C08d 5/02

U.S. Cl. 260—85.1 21 Claims

The molecular weight of solid hydrocarbon elastomers, e.g., polybutadienes, is increased step-wise in a defined manner by subjecting them to thermal-mechanical treatment in which the elastomer is subjected to strong shearing forces at, e.g., 80–220° C., in the presence of a non-basic metallic compound as catalyst and a basic compound as cocatalyst.

3,696,088

HYDROGENATION PROCESS

Albert N. De Vault, Bartlesville, Okla., assignor to Phillips Petroleum Company

No Drawing. Filed Sept. 11, 1970, Ser. No. 71,629

Int. Cl. C08d 5/00; C08f 27/24, 27/25

U.S. Cl. 260—85.1 5 Claims

Unsaturated polymers such as butadiene-styrene copolymers are hydrogenated in solution using a soluble organometal catalyst system in a reactor in which the solution of polymer and catalyst is trickled over a bed of inert packing in a hydrogen atmosphere.

3,696,089

SOLUTIONS CONTAINING A BASIC DYESTUFF AND AN α- OR β-HYDROXY- OR LOWER ALKOXY LOWER ALKYLNITRILE

Roderich Raue, Leverkusen, and Karlheinz Wolf, Cologne-Stammheim, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Continuation of application Ser. No. 550,919, May 18, 1966. This application Mar. 24, 1970, Ser. No. 20,462

Int. Cl. C09b 67/00; D06p 1/64, 1/86

U.S. Cl. 260—156 4 Claims

Solutions of basic dyestuffs containing 20 to 80% of basic dyestuff, 5 to 80% of a lower α- or β-hydroxy-alkylnitrile or α- or β-lower alkoxy lower alkylnitrile.

3,696,090

ROOM TEMPERATURE VULCANIZABLE SILICONE RUBBER COMPOSITION

Warren R. Lampe, Ballston Lake, N.Y., assignor to General Electric Company

No Drawing. Filed Sept. 28, 1970, Ser. No. 76,265

Int. Cl. C08f 21/01

U.S. Cl. 260—18 S 13 Claims

A room temperature vulcanizable silicone rubber composition comprising (a) a high molecular weight liquid diorganopolysiloxane having terminal hydroxy groups bonded to the silicon atom and a viscosity of 3×10^6 to 2×10^8 centipoise at 25° C., (b) 0–60% by weight of said high molecular weight organopolysiloxane of a low molecular weight liquid organopolysiloxane having terminal hydroxy groups bonded to the silicon atoms and a viscosity of 100 to 3.0×10^5 centipoise at 25° C. There is also present a filler and an alkyl silicate which acts as the cross-linking agent during curing of the composition. As a catalyst there is used a metallic salt of an organic monocarboxylic acid. The composition may be mixed and placed in the ear canal to form an ear plug in situ.

3,696,091

NOVEL CARDIAC-ACTIVE PRINCIPLES OF THE CARDENOLIDE GLYCOSIDE CLASS

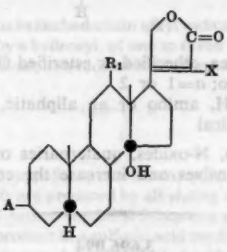
Wolfgang Eberlein and Josef Nickl, Biberach (Riss), Joachim Heider, Warthausen-Oberhofen, and Gerhard Dahms, Biberach (Riss), Germany, and Walter Kobinger, Vienna, Austria, assignors to Boehringer Ingelheim G.m.b.H., Ingelheim (Rhine), Germany

No Drawing. Filed June 3, 1970, Ser. No. 43,198

Int. Cl. C07c 173/00

U.S. Cl. 260—210.5 6 Claims

Cardenolide glycosides of the formula

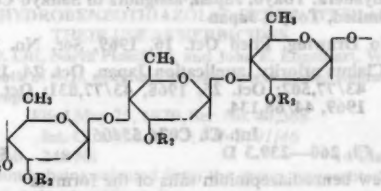


wherein

R_1 is hydrogen, hydroxyl or acyloxy,

X is chlorine, fluorine, alkyl of 1 to 4 carbon atoms or alkoxy of 1 to 4 carbon atoms, and

A is digitoxosyl of the formula



where R_2 is hydrogen or acyl; the compounds are useful as cardiac-active principles having a positive inotropic activity in warm-blooded animals.

3,696,092

PROCESS FOR THE CHEMICAL MODIFICATION OF POLYMERS CONTAINING ACTIVE HYDROGEN ATOMS BY REACTING SUCH WITH A SULFONAMIDE COMPOUND

Giuliana C. Tesoro, 278 Clinton Ave., Dobbs Ferry, N.Y. 10522

No Drawing. Original application July 23, 1964, Ser. No. 384,780, now Patent No. 3,528,964, dated Sept. 15, 1970. Divided and this application July 23, 1970, Ser. No. 63,987

Int. Cl. C08b 11/00

U.S. Cl. 260—231 A 7 Claims

Polymers containing active hydrogen atoms, as determined by the Zerewitinoff method, are reacted with various sulfonamide compounds in the presence of suitable catalysts to improve the properties of said polymers.

3,696,093

2,4-BENZODIAZEPINES

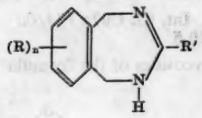
Herman Robert Rodriguez, New York, N.Y., and George de Stevens, Summit, N.J., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 29,257, Apr. 16, 1970, which is a continuation-in-part of application Ser. No. 840,833, July 10, 1969, now abandoned, which is a continuation-in-part of application Ser. No. 694,421, Dec. 29, 1967, now abandoned, which in turn is a continuation-in-part of application Ser. No. 630,497, Apr. 13, 1967, now abandoned. This application Sept. 30, 1970, Ser. No. 77,004

Int. Cl. C07d *53/04, 57/00, 99/10*

U.S. Cl. 260—239 BD **8 Claims**

4,5-dihydro-1H-2,4-benzodiazepines, e.g. those of the formula



R=H, alkyl, free, etherified or esterified OH or SH, CF_3, NO_2 or amino; n=1 or 2

R′=H, OH, SH, amino or an aliphatic, araliphatic or aromatic radical

acyl derivatives, N-oxides, quaternaries or salts thereof, are antihypertensives and increase the contractile force of the heart.

3,696,094

BENZODIAZEPINIUM SALTS AND PROCESS FOR PREPARING THE SAME

Ryuji Tachikawa, Hiromu Takagi, Toshiharu Kamioka, Mitsunobu Fukunaga, Yoichi Kawano, and Tetsuo Miyadera, Tokyo, Japan, assignors to Sankyo Company Limited, Tokyo, Japan

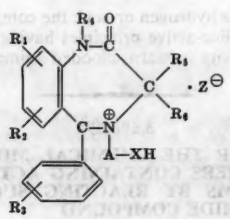
No Drawing. Filed Oct. 16, 1969, Ser. No. 9,241

Claims priority, application Japan, Oct. 24, 1968, 43/77,502; Oct. 25, 1968, 43/77,831; Oct. 28, 1969, 44/68,134

Int. Cl. C07d *53/06*

U.S. Cl. 260—239.3 D **5 Claims**

New benzodiazepinium salts of the formula



(I)

wherein

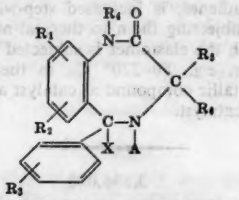
R_1, R_2 and R_3 may be the same or different and each represents hydrogen atom, a lower alkyl group, a lower alkoxy group, a halogen atom, hydroxy group, nitro group, cyano group, an acyl group, trifluoromethyl group, amino group, an acylamino group, a N-mono (lower alkyl)amino group, a N-di-(lower alkyl)amino group, an acyloxy group, carboxyl group, an alkoxycarbonyl group, carbamoyl group, a N-mono(lower alkyl)carbamoyl group, a N-di(lower alkyl)carbamoyl group, a lower alkylthio group, a lower alkylsulfinyl group or a lower alkylsulfonyl group;

R_4 represents hydrogen atom, a lower alkyl group, a cycloalkyl group, an aralkyl group, an aryl group or phenacyl group;

R_5 and R_6 may be the same or different and each represents hydrogen atom or a lower alkyl group;

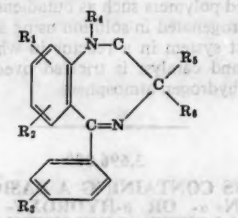
A represents a polymethylene group which may be substituted with a lower alkyl group;

X represents oxygen atom or sulfur atom and Z is an acid radical. These salts exhibits highly excellent psychosedative activity with favourable water-solubility and thus are useful as a tranquilizer. They are prepared by treating a benzodiazepine derivative of the formula



(II)

wherein R_1, R_2, R_3, R_4, R_5, R_6, A and X are as defined above with an inorganic or organic acid or by reacting a benzodiazepine derivative of the formula



(III)

wherein R_1, R_2, R_3, R_4, R_5 and R_6 are as defined above with a compound of the formula

Y—A—XH

wherein A and X are as defined above and Y represents a halogen atom in the presence of an inorganic or organic acid. The benzodiazepinium salts of the above Formula I can also be converted to the benzodiazepine derivatives of the above Formula II by treatment with water or a base.

3,696,095

(1,3) OXAZINO (3,2-d) (1,4) BENZODIAZEPINE DERIVATIVES AND PROCESS FOR THE PREPARATION THEREOF

Joseph Hellerbach, 140 Gundeldingerrain, and Andre Szente, 157 Riehenstrasse, both of Basel, Switzerland

No Drawing. Filed Sept. 9, 1971, Ser. No. 179,228

Claims priority, application Switzerland, Sept. 25, 1970, 14,263/70

Int. Cl. C07d *53/06, 87/20, 87/54*

U.S. Cl. 260—239.3 T **16 Claims**

Novel [1,3]oxazino[3,2-d][1,4]benzodiazepine derivatives and processes for their preparation are disclosed. These benzodiazepine derivatives are useful as sedative, anti-convulsant and muscle relaxant agents.

3,696,096

SUBSTITUTED 2-BENZOYL-AND 2-CINNAMOYL-ISOXAZOLIDINES

Giorgio Pifferi, Via G.B. Morini 22, Moroni, Italy, assignor to Gruppo Lepetit S.P.A., Milan, Italy

Filed March 26, 1970, Ser. No. 23,009
Int. Cl. C07d 85/08
U.S. Cl. 260—240 J 7 Claims

A new class of 2-aroyl- and 2-cinnamoyl-isoxazolidines exhibiting selective activity on the anxious response in laboratory animals.

3,696,097

HETEROCYCLIC SUBSTITUTED VINYL-V-TRIAZOLES OF THE COUMARIN SERIES, AND THEIR USE FOR THE OPTICAL BRIGHTENING OF ORGANIC MATERIALS

Hans Schlapfer, Basel, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed June 4, 1970, Ser. No. 43,564
Claims priority, application Switzerland, June 13, 1969, 9055/69
Int. Cl. C07d 55/02
U.S. Cl. 260—240 E 4 Claims

New 2-[3-arylcoumarinyl-(7)]-4-aryl-vinyl-v-triazoles are brighteners of high-molecular organic materials. The compounds are obtained by splitting off water from isnitrosoarylidene-acetone[-3-aryl-coumarinyl-(7)]-hydrazone.

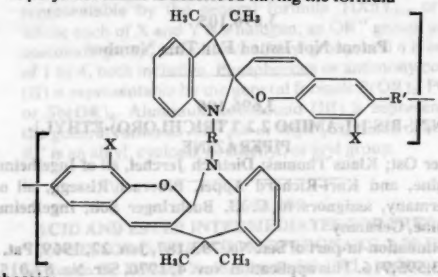
3,696,098

PHOTOCHROMIC POLYCONDENSATES OF THE INDOLINOSPIROPYRAN TYPE

Jan Antonius Hoefnagels, Berchem, Belgium; Norman A. Hiatt, Hamden, Conn., and Georges Joseph Smets, Heverlee, Belgium, assignors to Gevaert-AGFA N.V., Mortsel, Belgium

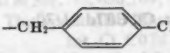
Filed June 10, 1970, Ser. No. 45,268
Claims priority, application Great Britain, July 11, 1969, 35,134/69
Int. Cl. C07d 27/38
U.S. Cl. 260—240 R 11 Claims

A polycondensate is described having the formula



wherein:

R represents



$-CH_2-CH_2-O-CH_2-CH_2-$, $-CH_2-CH=CH-CH_2-$, or $-(CH_2)_n-$ wherein n is 2 or an integer from 4 to 10,

X represents a hydrogen atom or a nitro group, and

R′ represents a single bond or a methylene group.

The polycondensates are photochromic and are reversibly colored upon exposure to ultraviolet radiation.

3,696,099

1,2,4-OXADIAZINE-3,6-DIONES

Daniel Makula; Monique Druet, both of Lyon, and Beatrice Gonthier, Caluire, all of France, assignors to Progie, Paris, France

Filed April 1, 1970, Ser. No. 24,859
Claims priority, application France, April 3, 1969, 6909530
Int. Cl. C07d 87/52
U.S. Cl. 260—244 R 12 Claims

1, 2, 4-oxadiazine-ones, useful as algicides, bactericides and fungicides, are obtained by reacting an N-hydroxy-urea and a dihalogenated organic derivative having halogen atoms on two adjacent carbon atoms.

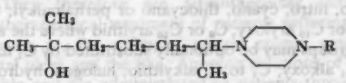
3,696,100

N-(6-METHYL-6-OL-2-HEPTYL)-N′-SUBSTITUTED PIPERAZINES

Guy M. Raynaud; Claude P. Fauran; Michel J. Turin, all of Paris; Bernard M. Pourriss, Meudon La Foret, and Gerard J. Huguet, Malesherbes, all of France, assignors to Delalande S.A., Regnault, France

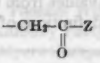
Filed April 13, 1970, Ser. No. 28,057
Claims priority, application France, April 22, 1969, 6912510
Int. Cl. C07d 51/70
U.S. Cl. 260—247.5 R 6 Claims

Piperazines of the formula



in which

R is a straight or branched chain alkyl radical, which may be substituted by a hydroxyl, of one to seven carbon atoms, a cinnamyl radical, or a radical of the formula



in which Z is hydroxy, alkoxy or a heterocyclic radical.

The compounds are prepared by alkylating an N substituted piperazine with 2-bromo-6-methyl 5-heptene and then hydrating the reaction product in a sulfuric acid medium.

The compounds may be incorporated with therapeutically acceptable carriers to make compositions exhibiting analeptic cardio-vascular effects.

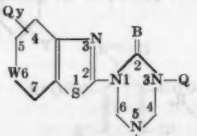
3,696,101

TETRAHYDROBENZOTHIAZOLYL DERIVATIVES AND THEIR USE AS HERBICIDES

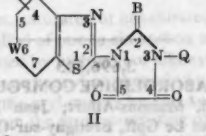
Arnold D. Litt, North Plainfield, and John E. Engelhart, Westfield, both of N.J., assignors to Esso Research and Engineering Company

Filed May 25, 1970, Ser. No. 40,368
Int. Cl. C07d 55/12, 91/42, 91/46
U.S. Cl. 260—248 NS 14 Claims

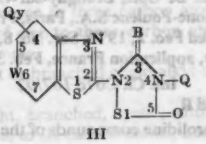
Compounds being selected from the group represented by the following structural formulas:



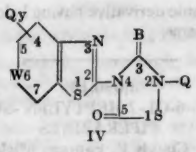
I



II



III



IV

where W can be CHR_3, O, or $S(O)_n$ and where n can be 0, 1 or 2, or N–R_4. R_3 can be hydrogen or C_1-C_6 alkyl and R_4 can be R_3, nitro, amino, or O. Q at different positions can be different and is selected from the group consisting of hydrogen, C_1 to C_{10} alkyl, C_3 to C_{10} alkenyl, C_4 to C_{10} alkynyl, C_3 to C_8 cycloalkyl, C_1 to C_7 alkoxy, C_3 to C_{10} cycloalkoxy, C_1 to C_{10} alkylthio, C_1 to C_{10} alkylamino, C_2 to C_{20} dialkylamino, C_3 to C_{10} cycloalkylamino, C_6 to C_{20} dicycloalkylamino. Each of the above mentioned hydrocarbon groups may be optionally substituted by halogen, hydroxy, C_1 to C_4 alkoxy, sulphonamido, C_1 to C_4 alkylthio, nitro, cyano, thiocyano or perhaloalkyl; C_6 or C_{10} aryl, C_6 or C_{10} aryloxy, C_6 or C_{10} arylthio where the aforementioned groups may be optionally substituted by C_1 to C_4 alkyl, C_1 to C_4 alkoxy, C_1 to C_4 alkylthio, halogen, hydroxy, nitro, cyano, or carboalkoxy. Q may also be cyano, sulphonamido, C_1 to C_6 carboalkoxy, perfluoroalkyl, nitro, mercapto, C_4 to C_9 heteroaryl or C_1 to C_{10} acyloxy optionally substituted by C_1 to C_4 alkyl, C_1 to C_4 alkoxy, C_1 to C_4 alkylthio, halogen, nitro, cyano, carboalkoxy, thiocyano or perhaloalkyl. When Q is C_1 to C_{10} alkyl, y may take values from 0 to 6. y may take values from 0 to 4 for all other definitions of Q. B may be O or S.

3,696,102

PROCESS FOR THE SYNTHESIS OF SUBSTITUTED QUINAZOLIN-4-ONES

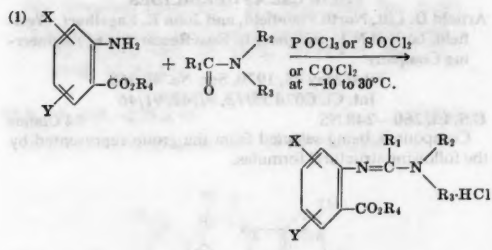
Timothy H. Cronin, Niantic, Conn., assignor to Chas. Pfizer & Co., Inc., New York, N.Y.

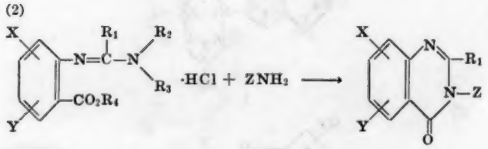
Filed March 9, 1970, Ser. No. 17,948

Int. Cl. C07d *51/48*

U.S. Cl. 260—251 QA **3 Claims**

A process for the preparation of a substituted quinazolin-4-one compound which comprises the following two reaction steps:





3,696,103

AZABOROLIDINE COMPOUNDS

Andrew Cometti, Maisons-Alfort; Jean Fouche, Bourg-la-Reine, and Yves Le Goff, Bretigny-sur-Orge, all of France, assignors to Rhone-Poulenc S.A., Paris, France

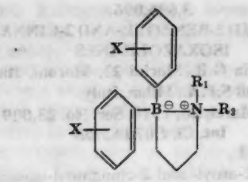
Filed Feb. 2, 1970, Ser. No. 8,034

Claims priority, application France, Feb. 3, 1969, 6902292

Int. Cl. C07d *107/02*

U.S. Cl. 260—268 R **16 Claims**

The new azaborolidine compounds of the formula:



wherein R_1 and R_2 represent alkyl of one through four carbon atoms, or R_1 and R_2 together with the nitrogen atom collectively represent a mononuclear 5- or 6-membered heterocyclic group, X represents hydrogen, halogen, alkyl, alkoxy or alkylthio of one through four carbon atoms, or trifluoromethyl or dimethylsulphamoyl, and at least one of the carbon atoms of the trimethylene chain linking the nitrogen and boron atoms can be substituted by alkyl of one through four carbon atoms, possess fungicidal, insecticidal acaricidal and herbicidal properties.

3,696,104

1-HYDROCARBON-4-ARYL-2,3-DIOXO-5-(2-HALOETHYL) PIPERAZINES

Carl Dalton Lunsford, Richmond, and Albert Duncan Cale, Jr., Mechanicsville, both of Va., assignors to A.H. Robins Company, Incorporated, Richmond, Va.

Filed April 27, 1970, Ser. No. 32,364

Int. Cl. C07d *51/70*

U.S. Cl. 260—268 DK **9 Claims**

1-Hydrocarbon-4-aryl-2,3-dioxo-5-(2-haloethyl)piperazines are described. They are prepared by reacting 1-substituted-3-arylaminopyrrolidines with oxalyl halides to form an N-(1-hydrocarbon-3-pyrrolidinyl)-N-aryloxamoyl halide intermediate which is not isolated and which rearranges under thermal and/or basic conditions to the novel compounds of the invention.

3,696,105

Patent Not Issued For This Number

3,696,106

N,N'-BIS-[(1-AMIDO 2,2,2 TRICHLORO)-ETHYL]-PIPERAZINE

Walter Ost; Klaus Thomas; Dietrich Jerchel, all of Ingelheim/Rhine, and Karl-Richard Appel, Biberach/Rissegg, all of Germany, assignors to C. H. Boehringer Soh, Ingelheim/Rhine, Germany

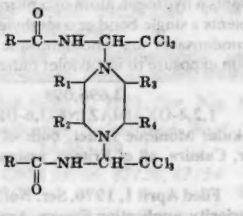
Continuation-in-part of Ser. No. 793,187, Jan. 22, 1969, Pat. No. 3,595,916. This application Nov. 4, 1970, Ser. No. 87,015

Claims priority, application Austria, Jan. 23, 1968, 67468123

Int. Cl. C07d *51/70*

U.S. Cl. 260—268 R **4 Claims**

Biocidal compounds of the formula



wherein R is hydrogen or lower alkyl which may have one or more halogen atoms attached thereto,

R_1 is hydrogen, lower alkyl or phenyl, and

R_2, R_3 and R_4 are each hydrogen or lower alkyl.

3,696,107

IMPROVED HYDROCARBON SEPARATION PROCESS

Richard W. Neuzil, 30 Algonquin Road, Des Plaines, Ill.

Continuation-in-part of Ser. No. 73,466, Sept. 18, 1970. This application May 27, 1971, Ser. No. 147,564

Int. Cl. C07c 7/12; C10g 25/04

U.S. Cl. 260—674 SA 11 Claims

A process for the separation of xylene isomers which process employs a type X or type Y structured crystalline aluminosilicate adsorbent to selectively adsorb one of the isomers. Adsorbents included are the type X structured and type Y structured zeolites which contain any number of selected cations including Group IA and Group IIA metals. The operations involved are fluid-solid contacting operations in which the particular improvement resides in the use of a two-stage desorption step in which a first diethylbenzene desorbent stream contacts the adsorbent to displace paraxylene from the adsorptive sites upon the adsorbent, and a second desorption stream containing primarily a saturated component contacts the adsorbent to flush the para-diethylbenzene and desorbed xylene from the interstitial void spaces located between the adsorbent particles.

3,696,108

PRODUCTION OF ISOPRENE DIMERS

Hiroyuki Morikawa, Ibaraki, Japan, assignor to Mitsubishi Petrochemical Company Limited, Tokyo-to, Japan

Filed Nov. 23, 1970, Ser. No. 92,221

Claims priority, application Japan, Dec. 24, 1969, 44/104018

Int. Cl. C07c 3/10, 11/02

U.S. Cl. 260—677 R 5 Claims

Isoprene is dimerized by being caused to contact a catalyst which is a combination of: (I) a titanium compound (e.g., titanium tetrachloride); (II) a phosphorus or antimony compound constituting an electron-donor compound (e.g., triphenyl phosphite); and (III) an aluminum compound (e.g., diethylaluminum chloride). Titanium compound (I) is representable by the general formula $TiXnY_{4-n}$ or $TiOX_2$, where each of X and Y is a halogen, an OR'' group, an acetylacetonato group, or a chlorosulfonyl group, and n is an integer of 1 to 4, both inclusive. Phosphorous or antimony compound (II) is representable by the general formuls $P(OR)_3$, $PO(OR)_3$, or $Sb(OR)_3$. Aluminum compound (III) is representable by the general formulas AlR'_2Cl or $Al_2R'_3Cl_3$. Each of R, R', and R'' is an alkyl, cycloalkyl, alkenyl, or aryl group.

3,696,109

ACID AND ESTER INTERMEDIATES FOR PREPARING 3,4-BISNOR-5-AZA-B-HOMOPREGNANE-2,20-DIONES

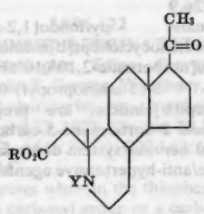
Seymour D. Levine, North Brunswick, N.J., assignor to E. R. Squibb & Sons, Inc., New York, N.Y.

Division of Ser. No. 686,744, Nov. 29, 1967, Pat. No. 3,557,087. This application May 14, 1970, Ser. No. 48,727

Int. Cl. C07d 33/02

U.S. Cl. 260—287 R 3 Claims

This invention relates to the preparation of steroids having the formula



wherein R is H or CH_3 and Y is

or H, Y being H only when R is H.

3,696,110

CERTAIN HYOSCYAMINIUM COMPOUNDS

Satoru Tanaka, and Kazunori Hasimoto, both of Tokyo, Japan, assignors to Gisai Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 858,110, Sept. 15, 1969, abandoned. This application Oct. 21, 1970, Ser. No. 82,813

Claims priority, application Japan, Feb. 18, 1969, 44/11531

Int. Cl. C07d 43/06

U.S. Cl. 260—292 5 Claims

A class of new quaternary ammonium salts derived from atropine or its optical isomer called hyoscyamine base with p-alkoxy or alkenoxy-substituted benzyl halide. The new quaternary ammonium salts according to the present invention exhibit a strong parasympathetic blocking activity with low toxicity. They therefore are advantageously utilizable for chemotherapeutical treatment of patients suffering from diseases such as, for example, gastric cramp, gastric ulcer, duodenal ulcer and the like. Aqueous solutions of these salts are stable and are administrated to patients through venous and subcutaneous injections as well as oral administration.

3,696,111

BENZOCYCLOBUTENE-1-CARBOXYLIC ACIDS

Peter Frederick Juby; Thomas William Hudyma, both of Dewitt, and Richard Anthony Partyka, Liverpool, all of N.Y., assignors to Bristol-Myers Company, New York, N.Y.

Filed July 23, 1970, Ser. No. 57,755

Int. Cl. C07c 63/44

U.S. Cl. 260—293.51 11 Claims

4-Cyclohexyl-or 4-phenylbenzocyclobutene-1-carboxylic acids or derivatives thereof are useful in the treatment of inflammatory diseases in animals, including man. An example of the disclosure is 4-cyclohexylbenzocyclobutene-1-carboxylic acid.

3,696,112

SULPHUR-CONTAINING 1,4-DIHYDROPYRIDINE DERIVATIVES

Friedrich Bossert, Wuppertal-Elberfeld, and Wulf Vater, Opladen, both of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

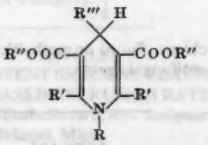
Filed Nov. 20, 1970, Ser. No. 91,607

Claims priority, application Germany, Dec. 17, 1969, P 19 63 186.8

Int. Cl. C07d 31/50

U.S. Cl. 260—294.8 F 23 Claims

Sulphur-containing 1,4-dihydropyridine derivatives of the formula:



wherein

R is hydrogen, saturated or unsaturated, straight, branched or cyclic alkyl of one to six carbon atoms, unsubstituted or substituted by hydroxyl or alkoxy of one to three carbon atoms, or benzyl or phenethyl unsubstituted or substituted in the aryl moiety by one, two or three members selected from the group consisting of one to three alkoxy moieties of one to three carbon atoms, one or two alkyl moieties of one to three carbon atoms and one to two halogen atoms,

R' is straight or branched chain alkyl of one to four carbon atoms,

R'' is straight, branched, cyclic, saturated or unsaturated alkyl of one to six carbon atoms, said alkyl interrupted by

one or two oxygen atoms or said alkyl substituted by hydroxyl,

R''' is aryl substituted by SO_nR_1, unsubstituted or substituted by one to eight members selected from the group consisting of nitro, amino, acylamino of one to two carbon atoms, hydroxyl, acyloxy of one to two carbon atoms, one or two alkyl moieties of one to four carbon atoms, one or two alkoxy moieties of one to four carbon atoms, and one or two halogen atoms,

n is 0, 1, 2 or 3, and

R_1 is lower alkyl of one to four carbon atoms or phenyl when n is 0, 1 or 2 and R_1 is hydrogen when n is 3,

are useful for their coronary dilating effect and antihypertensive effects. Processes for the production of these compounds are set forth below.

3,696,113

MANUFACTURE OF BIPYRIDYLIUM SALTS AND RELATED COMPOUNDS

John Edward Colchester; John Francis Cairns, and John Gerard Carey, all of Runcorn, England, assignors to Imperial Chemical Industries Limited, Millbank, London, England

Continuation-in-part of Ser. No. 811,617, March 28, 1969, abandoned. This application July 28, 1970, Ser. No. 59,030

Int. Cl. C07d *31/42, 31/44*

U.S. Cl. 260—295 AM **18 Claims**

There is provided a method of converting disubstituted tetrahydrobipyridyls to the corresponding bipyridinium salt by treating the tetrahydrobipyridyl with a dehydrogenating agent such as platinum metals and oxides to convert the tetrahydrobipyridyl to the corresponding dihydrobipyridyl and subsequently oxidizing the dihydrobipyridyl to the corresponding salt.

3,696,114

ANTIFUNGAL THIOCYANATOBENZOTHIAZOLES

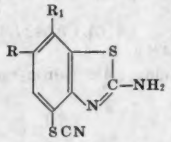
Robert J. Alaimo, and Stanford S. Pelosi, Jr., both of Norwich, N.Y., assignors to Morton-Norwich Products, Inc.

Filed Oct. 22, 1970, Ser. No. 83,220

Int. Cl. C07d *91/46*

U.S. Cl. 260—305 **4 Claims**

Certain thiocyanatobenzothiazoles of the formula:



wherein R is chloro, fluoro or methylthio; and R_1 is hydrogen or chloro are antifungal agents.

3,696,115

SUBSTITUTED 1,2,4-OXADIAZOLIDINE-3,5-DIONE

Albrecht Zschocke, 5 Berliner Strasse, 6702 Bad Duerkheim; Bernd Zeeh, 3 Thorwaldsenstrasse, 6700 Ludwigshafen, and Adolf Fischer, 43 Speyerer Strasse, 6704 Mutterstadt, all of Germany

Filed Oct. 7, 1970, Ser. No. 78,974

Claims priority, application Germany, Oct. 15, 1969, P 19 51 880.0

Int. Cl. C07d *85/52*

U.S. Cl. 260—307 B **1 Claim**

2-(3-tert-butylcarbamoyloxyphenyl)-4-methyl-1,2,4-oxadiazolidine-3,5-dione which has a good herbicidal action and a process for controlling the growth of unwanted plants with this compound.

3,696,116

1-(2-AMINOCARBONYLOXYETHYL)-5-NITROIMIDAZOLE DERIVATIVES HAVING ANTIPROTOZOAL ACTIVITY

Claude Jeanmart, Brunoy, and Mayer Naoum Messer, Bievres, both of France, assignors to Rhone-Poulenc S.A., Paris, France

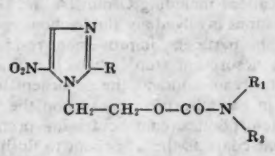
Filed July 15, 1970, Ser. No. 55,283

Claims priority, application France, July 18, 1969, 6924575

Int. Cl. C07d *49/36*

U.S. Cl. 260—309 **7 Claims**

Imidazole derivatives of the formula:



wherein R represents hydrogen or alkyl of one through four carbon atoms, R_1 represents hydrogen, alkyl of one through five carbon atoms, or hydroxy, and R_2 represents hydrogen or alkyl of one through five carbon atoms, possess anti-protozoal activity, especially against the pathogenic protozoa of amoebiasis and trichomoniasis.

3,696,117

AZABICYCLOALKYL UREA COMPOUNDS

Laszlo Beregi, Boulogne S/Seine; Pierre Hugon, Rueil-Malmaison, and Pierre Desnoyers, Fontenay-aux-Roses, all of France, assignors to Societe en nom collectif "Science Union et Rie, Societe Francaise de Recherche Medicale", Suresnes, France

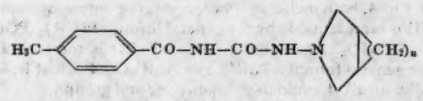
Filed Sept. 28, 1970, Ser. No. 76,204

Claims priority, application Great Britain, March 10, 1969, 48,645/69

Int. Cl. C07d *27/30*

U.S. Cl. 260—326.3 **2 Claims**

N-aroyl-N′-(3-azabicycloalkyl) ureas of the formula:



I

wherein n is 1, 2 or 3.

These compounds possess fibrinolytic and platelet stickiness decreasing properties, decrease the capillary permeability, increase their resistance and improve the microcirculation.

3,696,118

SPIRO NORBORNANE 6,9-METHANOCYCLOHEPT(B)INDOLES

Marcel K. Eberle, 57 Maple Ave., Madison, N.J.

Filed April 22, 1970, Ser. No. 33,097

Int. Cl. C07d *27/54*

U.S. Cl. 260—326.9 **4 Claims**

Spiro-norbornane pyrimido[1,2-a]indoles and aminopropyl-methanocyclohept[b]indoles, e.g., 1′,2′,3′,4-tetrahydro-spiro[norbornane-2,10′(10′aH)-pyrimido[1,2-a]indole]and 5-(3-aminopropyl)-6,9-dihydro-10H-6,9-methanocyclohept[b]eindole, are prepared from phenyl pyrazolodines and 2-norbornene-5-carboxaldehyde, and are useful as central nervous system depressants, antidepressants and hypotensive/anti-hypertensive agents.

3,696,119

Patent Not Issued For This Number

3,696,120

4-(2-HYDROXY-3-AMINO PROPOXY)-INDOLE DERIVATIVES

Franz Troxler, 39 Drosselstrasse, 4103 Bottmingen, Basel-Land, Switzerland

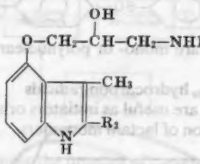
Filed July 28, 1970, Ser. No. 58,985

Claims priority, application Switzerland, Aug. 5, 1969, 11918/69; Oct. 24, 1968, 15866/69; June 24, 1970, 9536/70; Oct. 24, 1969, 15865/69; March 24, 1970, 4383/70

Int. Cl. C07d *27/56*

U.S. Cl. 260—326.14 R 8 Claims

The present invention concerns new indole derivatives of the formula:



wherein

R_1 is lower alkyl of one to six carbon atoms, preferably of three to five carbon atoms, cycloalkyl of three or four carbon atoms or 3-phenylpropyl,

R_2 is methyl, hydroxymethyl, methoxymethyl, alkoxycarbonyl wherein the alkoxy group is of one to four carbon atoms or carboxyl.

The compounds are useful in the treatment of angina pectoris and heart rhythm disorders.

3,696,121

4-(2-HYDROXY-3-AMINO PROPOXY)-INDOLE DERIVATIVES

Franz Troxler, Bottmingen, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

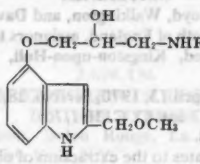
Filed July 17, 1970, Ser. No. 55,945

Claims priority, application Switzerland, July 25, 1969, 11365/69; May 26, 1970, 7795/70

Int. Cl. C07d *27/56*

U.S. Cl. 260—326.15 5 Claims

The invention concerns new indol derivatives of the formula:



wherein R_1 is lower alkyl, cycloalkyl of three or four carbon atoms, or 3-phenylpropyl, as well as processes for the production thereof.

The compounds have a blcoking effect on the vascular adrenergic β-receptors.

3,696,122

THIOPHENE DERIVATIVES

Joseph Kenneth Harrington, Edina; George G. I. Moore, Birchwood, and John F. Gerster, Woodbury, all of Minn., assignors to Riker Laboratories, Inc., Northridge, Calif.

Filed April 13, 1970, Ser. No. 28,150

Int. Cl. A61k *27/00*; C07d *63/12*

U.S. Cl. 260—332.3 C 13 Claims

Thiophene derivatives wherein the thiophene ring is linked by oxygen, sulfur, a carbonyl group or a carbon-carbon bond to a phenyl ring which is substituted by a haloalkylsulfonamido group, and the sulfonamido nitrogen atom is optionally substituted. These compounds are active anti-inflammatory agents.

3,696,123

DIHYDROCARBONOXYOXETHANES

Siegfried H. Schroeter, 54 Division St., Schenectady, N.Y., and Charles M. Orlando, 749 Central Parkway, Schenectady, N.Y.

Division of Ser. No. 732,901, May 29, 1968, Pat. No. 3,616,358. This application March 19, 1970, Ser. No. 24,981

Int. Cl. C07d *3/00*

U.S. Cl. 260—333 8 Claims

Dihydrocarbonoxyoxetanes, such as 2,2-dialkoxyoxetane or 3,3-dialkoxyoxetane can be made by the reaction of an aldehyde or ketone with ketene acetals utilizing ultraviolet light. The dihydrocarbonoxetanes can be employed as starting materials in the preparation of polymers containing polytrimethylene oxide units. The dihydrocarbonoxetanes also can be polymerized with hydroxyl containing materials employing a catalyst such as boron trifluoride to yield hydroxy terminated polymers.

3,696,124

Patent Not Issued For This Number

3,696,125

PROCESS FOR THE PRODUCTION OF SALTS OF 5-FORMYL-FURAN-2-SULPHONIC ACID

Gert Jansen, Farum, and Niels Clauson-Kaas, Horsholm, both of Denmark, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 56,651, July 20, 1970, abandoned. This application Oct. 16, 1970, Ser. No. 81,586

Int. Cl. C07d *5/14*

U.S. Cl. 260—347.2 8 Claims

Salts of 5-formyl-furan-2-sulphonic acid are produced by a new process by reacting cis-oxoglutaconaldehyde or an acetal thereof with an alkali metal hydrogen sulphite.

3,696,126

AZIDOFORMATES FROM REDUCED POLYMERIZED FATTY ACIDS

David S. Breslow, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed Nov. 23, 1970, Ser. No. 92,275

Int. Cl. C07d *109/00*

U.S. Cl. 260—349 3 Claims

Polyols, obtained by hydrogenolysis of polymerized ethylenically unsaturated fatty acids, e.g., the diol from dimer acid, are converted to poly(azidoformate)s. These new poly(azidoformate)s, useful for cross-linking a wide variety of polymers, are relatively insensitive to shock and hence are not hazardous to handle or transport.

3,696,127

HIGH FILLER CONTENT SILICONE ELASTOMER WITH INCREASED EXTRUSION RATE

James E. Matherly, Elizabethtown, Ky., assignor to Dow Corning Corporation, Midland, Mich.

Filed July 9, 1970, Ser. No. 53,694

Int. Cl. C08k *1/06*

U.S. Cl. 260—375 B 5 Claims

A mixture of 100 parts by weight of a homogeneous mixture of 50 to 85 weight percent of an organodialkoxysiloxy endblocked polydiorganosiloxane, 10 to 35 weight percent hexamethyldisilazane, 4 to 30 weight percent water and 0 to 15 weight percent organotrialkoxysilane and from 125 to 250 parts by weight of a metal oxide filler, such as aluminum oxide is a silicone elastomer composition with increased extrusion rate after the volatile materials have been removed. Adding organotrialkoxysilane and organotitanate catalyst to the devolatized composition provides a one package silicone elastomer which is stable in the absence of moisture but cura-

ble upon exposure to moisture. The mixtures are prepared by mixing the polymer, hexamethyldisilazane, water and organotrialkoxysilane into a homogeneous mixture and thereafter adding the metal oxide filler and removing the volatiles under reduced pressure and adding organotrialkoxysilane and organotitanate catalyst to provide the silicone elastomer composition which is stable in the absence of moisture but curable upon exposure to moisture.

3,696,128

PERFLUOROPOLYETHER ESTERS OF QUINONES

Bruce Hollis Garth, Newark, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed June 8, 1970, Ser. No. 44,649
Int. Cl. C07c *69/66*
U.S. Cl. 260—376 **10 Claims**

Perfluoropolyether esters of quinones having the formula $[R_fO(C_mF_{2m}O)_nCF(V)COO]_pQ$, $Q[OC(O)CF(V)(OC_mF_{2m})OR'_fO(C_mF_{2m}O)_nCF(V)COO]Q$, or $Q[OC(O)CF(V)O(C_mF_{2m}O)_nCF(V)COO]Q$ wherein R_f is a perfluoroalkyl group having from one to six carbon atoms, m is an integer of from 1 to 3, n is from 0 to about 20, R'_f is a perfluoroalkylene group having from two to 10 carbon atoms, V is F or CF_3, Q is a quinone radical and p is the number of hydroxyl groups on Q which are esterified; and fluorinated oils containing these esters.

3,696,129

18-LOWER ALKYL 20-KETO-PREGNANES

John A. Edwards, Los Altos, Calif., assignor to Syntex Corporation, Panama, Panama

Continuation-in-part of Ser. No. 538,581, March 30, 1966, Pat. No. 3,624,111, which is a continuation-in-part of Ser. Nos. 528,398, Feb. 18, 1966, Pat. No. 3,402,173, and Ser. No. 441,297, March 19, 1965, abandoned. This application Oct. 9, 1970, Ser. No. 79,706
Int. Cl. C07c *169/34*
U.S. Cl. 260—397.3 **11 Claims**

18-Lower alkyl androstenes are prepared by a sequence of steps from 3β, 20β-dihydroxypregn-5-en-18-oic acid 18,20-lactone 3-acetate. The method proceeds through novel 18-lower alkyl pregnane intermediate compounds. These compounds are useful as intermediates and also possess antiestrogen activity. The 18-lower androstene products possess various useful steroidal activities.

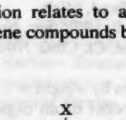
3,696,130

PROCESS FOR THE MANUFACTURE OF ACETYLENE COMPOUNDS

Peter Wieland, Oberwil/Basel-Land, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Aug. 25, 1970, Ser. No. 66,904
Claims priority, application Switzerland, Sept. 11, 1969, 13733/69
Int. Cl. C07c *167/18*
U.S. Cl. 260—397.5 **10 Claims**

The present invention relates to a new process for the manufacture of acetylene compounds by decomposing a compound of the formula



in which X is a reactively esterified hydroxyl group, e.g. a hydroxy group esterified with an organic sulfuric acid or with a halic acid, R' is a nucleofuge group and one of the residues R_1 and R_2 represents an organic radical and the other hydrogen or an organic radical.

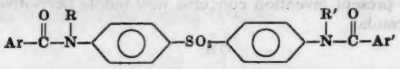
3,696,131

AROMATIC ACID DIAMIDES OF DIAMINO DIPHENYL SULFONES

Markus Matzner, Edison; Walter T. Reichle, Millington; Sui-Wu Chow, and James E. McGrath, both of Somerville, all of N.J., assignors to Union Carbide Corporation, New York, N.Y.

Filed April 6, 1970, Ser. No. 26,053
Int. Cl. C07c *103/22*
U.S. Cl. 260—397.6 **3 Claims**

Compounds of the structure



wherein Ar and Ar' are mono- or polynuclear aromatic radicals, and

R and R' are C_1 to C_{20} hydrocarbon radicals

These compounds are useful as initiators or activators in the anionic polymerization of lactam monomers.

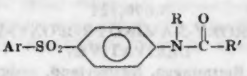
3,696,132

MONOAMIDES OF MONOAMINO DIARYL SULFONES

Markus Matzner, Edison; Walter T. Reichle, Millington; Sui-Wu Chow, and James E. McGrath, both of Somerville, all of N.J., assignors to Union Carbide Corporation, New York, N.Y.

Filed April 6, 1970, Ser. No. 26,057
Int. Cl. C07c *103/12*
U.S. Cl. 260—397.6 **4 Claims**

Compounds of the structure



wherein Ar is a mono- or polynuclear aromatic radical, and R and R' are C_1 to C_{20} hydrocarbon radicals. These compounds are useful as initiators or activators in the anionic polymerization of lactam monomers.

3,696,133

EXTRACTION OF OIL FROM OIL-BEARING MATERIALS

Anthony Michael Lloyd, Walkington, and David George Alexander, Kirkella, both of England, assignors to Rose Downs & Thompson Limited, Kingston-upon-Hull, Yorkshire, England

Filed April 13, 1970, Ser. No. 28,149
Int. Cl. C11b *1/10*
U.S. Cl. 260—412.8 **16 Claims**

The invention relates to the extraction of oil from seeds and other oil-bearing materials. The oil-bearing material is first treated with a polar solvent such as isopropyl alcohol in aqueous solution and then a second solvent which has a lower polarity and which may be hexane is passed through the once-treated material. The treatment with the first solvent facilitates the passage of the second solvent through the material and hence the extraction of the oil from the material. Water may be added to the extract recovered from the treatment with the second solvent, to aid separation of the oil from other constituents of the material.

3,696,134

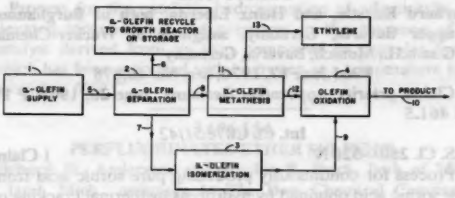
PROCESS FOR PEAKING THE OXIDATION PRODUCTS OF 1-OLEFINS

Paul H. Washecheck, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.

Filed Jan. 9, 1970, Ser. No. 1,655
Int. Cl. C08h *17/36*
U.S. Cl. 260—413 **6 Claims**

A peaking process is disclosed for preparing aldehydes or carboxylic acids from a mixture of alpha olefins. The alpha olefins are separated into at least two fractions consisting of a

low molecular weight fraction and a high molecular weight fraction. The high molecular weight fraction is isomerized and the two fractions oxidized. The low molecular weight fraction will oxidize to C_{n-1} product and C_1 product. The high molecular weight fraction will cleave at the double bond giving



products containing the number of carbon atoms of the groups on either side of the double bond. The procedure has great versatility by varying the number of fractions and isomerizations. With alpha olefins prepared from metal alkyl growth product, M-values also have an influence on the final product.

3,696,135

PROCESS FOR THE PRODUCTION OF NICKEL SALTS OF MONOESTERS OF 3,5-DI-TERT. BUTYL-4-HYDROXYBENZYLPHOSPHONIC ACID

Peter Kartschmaroff, Arlesheim/Basel-Land, and Paul Moser, Basel, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed July 16, 1970, Ser. No. 55,616

Claims priority, application Switzerland, July 31, 1964, 11649/69

Int. Cl. C07f *15/02*

U.S. Cl. 260—439 R **6 Claims**

Nickel salts of monoesters of 3,5-di-tert.butyl-4-hydroxybenzylphosphonic acid are produced by saponifying the corresponding diesters and adding a nickel salt to the reaction mixture. The obtained nickel salts are stabilizers of synthetic polymers.

3,696,136

METHOD OF STABILIZING SODIUM ALUMINUM DIETHYL HYDRIDE

Gunner E. Nelson, Baton Rouge, La., assignor to Ethyl Corporation, New York, N.Y.

Filed Oct. 9, 1970, Ser. No. 79,682

Int. Cl. C07f *5/06*

U.S. Cl. 260—448 A **7 Claims**

Sodium aluminum diethyl dihydride, a chemical reducing agent, is more soluble and more stable in liquid alkyl benzenes than it is in benzene.

3,696,137

POLYPHENYLENE-OXIDE-ORGANOPOLYSILOXANE BLOCK CO-POLYMERS

Robert F. Clark, Glendale Heights, Ill., and Karl W. Krantz, Schenectady, N.Y., assignors to General Electric Company

Filed March 5, 1971, Ser. No. 121,535

Int. Cl. C07f *7/18*

U.S. Cl. 260—448.8 R **3 Claims**

Block copolymers having polyphenylene oxide segments and polydimethylsiloxane segments, with the units present in critical length ratios, are useful as surface tension depressants for dielectric fluids, particularly dielectric fluids of the askarel type.

3,696,138

METHOD OF PRODUCING 2-(CHLOROMETHYL) ALLYL-SUBSTITUTED SILANES

Keith W. Michael, and William E. Dennis, both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed May 28, 1971, Ser. No. 148,200

Int. Cl. C07f *7/08*

U.S. Cl. 260—448.2 E **5 Claims**

When reacting chlorine with methallylsilanes, the yield of 2-(chloromethyl)allylsilanes is increased substantially by carrying out the reaction in the absence of light or other sources of free radicals.

3,696,139

Patent Not Issued For This Number

3,696,140

Patent Not Issued For This Number

3,696,141

PROCESS FOR THE PRODUCTION OF METHYL BENZOATE

Hans Leo Hulsmann, Wengern; Gustav Renckhoff, and Albino Pastura, both of Witten Ruhr, all of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany

Filed May 27, 1970, Ser. No. 41,054

Claims priority, application Germany, May 30, 1969, P 19 27 554.8

Int. Cl. C07c *69/78, 69/80*

U.S. Cl. 260—476 R **8 Claims**

Methyl benzoate having a purity of at least 99 percent is produced from the by-products obtained in the manufacture of dimethyl terephthalate by the oxidation of p-xylene by subjecting said by-products to an oxidative treatment, preferably with molecular oxygen, for example, air, and then fractionally distilling the oxidized product to obtain substantially pure methyl benzoate. In this way, compounds which can be separated only with difficulty from methyl benzoate by fractional distillation are oxidized, leaving only substances which are separable therefrom by distillation.

3,696,142

PRODUCTION OF CYCLOHEXENYL ACETATE

Gerhard Schulz, 5 Liebermannstrasse, 6700 Ludwigshafen; Erich Haarer, 36 Hammelstalstrasse, 6732 Bad Duerkheim, and Guenther Matthias, 23 An der Froschlache, 6700 Ludwigshafen, all of Germany

Filed Nov. 9, 1970, Ser. No. 88,155

Claims priority, application Germany, Nov. 14, 1969, P 19 57 299.7

Int. Cl. C07c *67/00*

U.S. Cl. 260—488 R **4 Claims**

Manufacture of cyclohexenyl acetate by reacting cyclohexanone with ketene in the presence of a phosphorus trihalide as catalyst. Cyclohexenyl acetate is an important intermediate in the manufacture of caprolactam.

3,696,143

DETERGENT ACTIVE MATERIALS

Virender Nath Malhotra, Bebington, England, assignor to Lever Brothers Company, New York, N.Y.

Filed July 24, 1970, Ser. No. 58,023

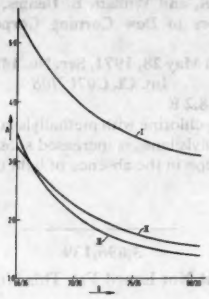
Claims priority, application Great Britain, July 25, 1969, 37453/69

Int. Cl. C11d *1/12*

U.S. Cl. 260—513 R **8 Claims**

The inorganic salt content of alkane sulphonates, alcohol sulphates and olefin sulphonates can be reduced by treating

the detergent active with a mixture of water and isopropanol and/or isobutanol with the conversion of bisulphite ions into sulphite ions. The treatment is performed under reflux at a



temperature between boiling and 20°C below boiling. A proportion of the inorganic material precipitates and is separated from the liquor which contains the active.

3,696,144

11,15-DIHYDROXY-9-OXOPROSTA-8(12),13-DIENOIC ACIDS AND INTERMEDIATE

Masateru Miyano, Morton Grove, Ill., assignor to G. D. Searle & Co., Chicago, Ill.

Continuation-in-part of Ser. No. 799,965, Feb. 17, 1969, abandoned. This application Nov. 27, 1970, Ser. No. 93,489

Int. Cl. C07c *61/36*

U.S. Cl. 260—514 R **5 Claims**

The utilization of styrylglyoxal and a dialkyl ester of 3-oxoundecane-1,11-dioic acid as starting materials leads to cis- and trans-11,15-dihydroxy-9-oxoprosta-8(12),13-dienoic acids, which exhibit valuable pharmacological properties, e.g. hypotensive, antiulcerogenic and smooth muscle stimulating.

3,696,145

NEW PROCESS FOR THE PREPARATION OF 1-INDANCARBOXYLIC ACIDS

Yvon G. Perron, St. Lambert, Quebec, and James L. Douglas, Greenfield Park, Quebec, both of Canada, assignors to Bristol-Myers Company, New York, N.Y.

Filed Sept. 27, 1971, Ser. No. 184,307

Int. Cl. C07c *63/44*

U.S. Cl. 260—515 R **3 Claims**

Levorotatory 5-cyclohexyl-1-indancarboxylic acid is a useful anti-inflammatory agent in the treatment of inflammatory diseases in animals, including man. As such, a new and more efficient process has been discovered for the preparation of large quantities of the racemic mixture of the compound, (±)-5-cyclohexyl-1-indancarboxylic acid.

3,696,146

CARBOXYLATION OF ACETYLENIC COMPOUNDS

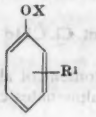
Edwin L. Patmore; William R. Siegart, and Harry Chafetz, all of c/o Texaco Inc. P.O. Box 509, Beacon, N.Y.

Division of Ser. No. 794,344, Jan. 27, 1969. This application Nov. 10, 1971, Ser. No. 197,530

Int. Cl. C07c *53/00, 63/00*

U.S. Cl. 260—515 R **5 Claims**

Method of carboxylating an organic compound of the group of RC ≡ CH, RCH_2CN, indene or cyclopentadiene where R is hydrocarbyl comprising contacting under anhydrous conditions in an inert atmosphere and in the presence of an inert, aprotic, dipolar, liquid solvent, said compound with a carbonated metal pheroxide, the metal phenoxide of the formula:



where X is sodium or potassium, R^1 is hydrogen or alkyl, and subsequently acidifying the resultant intermediate product to form the carboxylated product.

3,696,147

PROCESS FOR CONTINUOUSLY PRODUCING PURE SORBIC ACID

Gerhard Kunstle, and Heinz Liberda, both of Burghausen upper Bavaria, Germany, assignors to Wacker-Chemie G.m.b.H., Munich, Bavaria, Germany

Filed June 17, 1970, Ser. No. 46,878

Claims priority, application Germany, June 20, 1969, P 19 31 461.5

Int. Cl. C07c *51/42*

U.S. Cl. 260—526 N **1 Claim**

Process for continuously producing pure sorbic acid from raw sorbic acid obtained by hydrolysis or thermal cracking of polyesters by crystallization from water, which comprises forming a saturated aqueous solution of raw sorbic acid at a temperature slightly below the boiling point of the water and with a short dwell time of the order of 2 to 5 minutes, separating the impurities from the dissolved sorbic acid by centrifuging at the same temperature, and crystallizing out the pure sorbic acid.

3,696,148

Patent Not Issued For This Number

3,696,149

Patent Not Issued For This Number

3,696,150

HALOGEN-EXCHANGE FLUORINATION OF ORGANIC COMPOUNDS USING AMMONIUM FLUORIDE

Bernard M. Lichstein, Elizabeth, and Cyril Woolf, Morristown, both of N.J., assignors to Allied Chemical Corporation, New York, N.Y.

Filed Feb. 16, 1970, Ser. No. 11,908

Int. Cl. C07c *51/58, 17/20*

U.S. Cl. 260—544 F **9 Claims**

Compounds having a nonfluorine halogen atom attached to a carbon atom which in turn is bonded to two phenyl groups, or doubly bonded to an oxygen atom, are fluorinated by reaction with ammonium fluoride or ammonium bifluoride, whereby the halogen atom is replaced by fluorine.

3,696,151

Patent Not Issued For This Number

3,696,152

HYDRATION OF NITRILES TO AMIDES USING HETEROGENEOUS CUPREOUS CATALYSTS

Clarence E. Habermann, and Mary R. Thomas, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed June 17, 1970, Ser. No. 47,166

Int. Cl. C07c *103/08*

U.S. Cl. 260—561 N **17 Claims**

Cupreous catalysts prepared by reducing a mixture consisting essentially of copper oxide in combination with certain metal oxides have been discovered to be excellent heterogeneous catalysts for the hydration of nitriles to the corresponding amide.

3,696,153

HYDROGENATION OF ADIPONITRILE

Bernard John Kershaw; Maurice George Pounder, and Kenneth Ross Wilkins, all of Brockville, Ontario, Canada, assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed May 7, 1970, Ser. No. 35,573
Claims priority, application Canada, July 11, 1969, 056,835
Int. Cl. C07c *85/12*
U.S. Cl. 260—583 K 7 Claims

Process for the catalytic hydrogenation of adiponitrile at elevated temperatures and pressures in the presence of a catalyst derived from an iron compound in granular form which has been activated with hydrogen at a temperature not exceeding 600° C.

3,696,154

PERFLUORINATED ETHER SULFIDES

Richard W. Anderson, and Hughie R. Frick, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed June 12, 1970, Ser. No. 45,940
Int. Cl. C07c *149/26*
U.S. Cl. 260—609 F 6 Claims

Disclosed are perfluorinated ether sulfides characterized by the formula:

$$R_fO-\overset{\frown}{R}-S-\overset{\frown}{R}-OR_f.$$

In the above formula,

$\overset{\frown}{R}$ is $-C(CF_2)_n=C(CF_2)_n-$ or $-\underset{(CF_2)_n}{\overset{F}{C}}-\underset{(CF_2)_n}{\overset{F}{C}}-$

with n being 2, 3 or 4 and R_f is a perfluoroaliphatic group or a perfluoroaliphatic ether containing from one to 20 carbon atoms. The unsaturated compounds are prepared by reacting a perfluoroalkoxy perfluorocycloalkene of the formula:

$$\begin{matrix} F \\ C \\ \| \\ (CF_2)_n \end{matrix} \overset{\overset{F}{C}}{\underset{(CF_2)_n}{\|}} -OR_f$$

wherein R_f and n are as defined above with an alkali metal sulfide. Saturated perfluorinated either sulfides are prepared by adding fluorine across the double bond of the unsaturated compounds. These compounds are useful as hydraulic fluids for high temperature applications.

3,696,155

PRODUCTION OF 2-METHYL-3-BUTEN-2-OL

Herbert Mueller, 53 Carostrasse, 6710 Frankenthal, and Dietrich Mangold, 49 Hermann-Walker-Strasse, 6903 Neckargemuend, both of Germany

Filed May 13, 1970, Ser. No. 37,061
Claims priority, application Germany, May 17, 1969, P 19 25 197.9
Int. Cl. C07c *29/00, 1/24*
U.S. Cl. 260—642 6 Claims

Production of 2-methyl-3-buten-2-ol in which an aqueous acid is allowed to act on 3-methyl-3-buten-1-ol at temperatures of from 20° to 250°C while removing by distillation the 2-methyl-3-buten-2-ol formed. 2-methyl-3-buten-2-ol is an important intermediate for the production of terpenes.

3,696,156

PROCESS FOR PURIFICATION OF FLUOROPERHALOCARBONS

Robert Hugh Weeks, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed April 3, 1970, Ser. No. 25,576
Int. Cl. C07c *17/38, 19/08*
U.S. Cl. 260—648 F 4 Claims

Saturated fluoroperhalocarbons of two to six carbon atoms in which halogen is chlorine or fluorine can be purified to readily and economically remove olefinic impurities by contacting, in the vapor phase, the impure saturated fluoroperhalocarbons with alumina containing from about 0.1 percent to about 5 percent of alkali metal hydroxide in the temperature range of from about 180° C. to about 250° C.

3,696,157

PREPARATION OF 5-ETHYLIDENEBICYCLO(2.2.1)HEPT-2-ENES

Wolfgang Schneider, Brecksville, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.

Filed June 14, 1971, Ser. No. 153,096
Int. Cl. C07c *5/28*
U.S. Cl. 260—666 PY 6 Claims

5-Vinylbicyclo[2.2.1]hept-2-enes heated in the presence of a titanium catalyst system are isomerized to 5-ethylidenebicyclo[2.2.1]hept-2-enes. The catalyst system of this invention comprises a titanium compound, an alkali metal, and a cyclopentadienyl magnesium halide. The catalyst system is highly efficient and capable of rapidly isomerizing 5-vinylbicyclo[2.2.1]hept-2-enes. 5-Ethylidenebicyclo[2.2.1]hept-2-enes are useful comonomers for polymerization with α-olefins such as ethylene and propylene.

3,696,158

CONVERSION OF ACETYLBENZENES TO UNSATURATED DERIVATIVES

Howard M. Relles, Rexford, N.Y., assignor to General Electric Company, N.Y.

Filed Aug. 26, 1970, Ser. No. 67,213
Int. Cl. C07c *15/04*
U.S. Cl. 260—668 R 8 Claims

Although phosgene itself does not react with the carbonyl group of acetylbenzenes, the adduct of phosgene and pyridine will react converting the acetyl group to either the α-chlorovinyl or α, α-dichloroethyl group. The α,α-dichloroethyl group can be converted to the α-chlorovinyl group and the latter can be dehydrohalogenated to the ethynyl group. This reaction permits low cost phosgene to be substituted for the much more expensive phosphorus pentachloride thereby providing an economical process for converting acetylbenzenes to the corresponding ethynylbenzenes which are useful in making polyacetylenes.

3,696,159

Patent Not Issued For This Number

3,696,160

SELECTIVE HYDROGENATION OF DIOLEFINS

Karl D. Chomyn, Dover, N.J., assignor to Esso Research and Engineering Company

Filed March 26, 1970, Ser. No. 22,792
Int. Cl. C07c *5/06*
U.S. Cl. 260—677 H 4 Claims

Diolefins, present in minor amounts, in gaseous feed streams, particularly those to be used in alkylation reactions are selectively converted to mono-olefins by hydrogenation over sulfided nickel-tungsten catalyst.

3,696,161

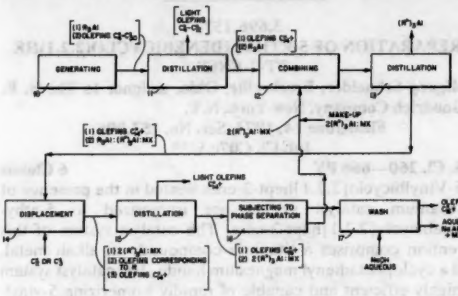
CHEMICAL PROCESS OF SEPARATING HYDROCARBYL ALUMINUM FROM OLEFINS BY THE USE OF 2:1 COMPLEXES OF ALUMINUM ALKYLS AND AN ALKALI METAL SALT

Paul Kobetz, Baton Rouge, La., and Kenneth L. Lindsay, Baton Rouge, La., assignors Ethyl Corporation, New York, N.Y.

Filed Sept. 30, 1970, Ser. No. 76,809
Int. Cl. C07c *11/12*
U.S. Cl. 260—677 A 9 Claims

Hydrocarbyl aluminum compounds are separated from olefins readily by the use of 2:1 complexes of aluminum alkyls

and various complexing agents such as sodium fluoride and sodium cyanide. An important aspect is that the process does not require pyrolysis cleavage of the complexes. An overall



olefins process is disclosed wherein the aluminum hydrocarbyl compounds removed from the olefins are recovered and recycled.

3,696,162

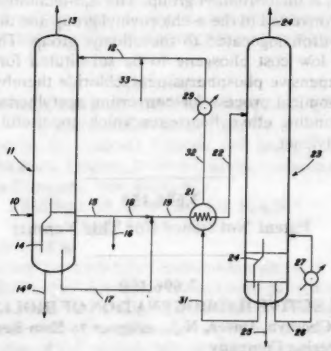
AQUEOUS AMINE ACID GAS ABSORPTION

Ludwig Kniel, Scarsdale, N.Y., assignor to The Lummus Company, Bloomfield, N.J.

Continuation-in-part of Ser. No. 768,303, Oct. 17, 1968, Pat. No. 3,598,881. This application May 26, 1971, Ser. No. 146,915

Int. Cl. C07c *11/02*

U.S. Cl. 260—677 A **8 Claims**



Acid gases are removed from a gaseous stream containing the acid gases and also dienes by contact with a mixture of a lean aqueous amine acid gas absorption solution and a hydrocarbon solvent free of olefinic unsaturation. The use of such a mixture prevents the problems encountered in the amine regeneration system as a result of dienes being carried into the system.

3,696,163

ISOBUTENE AND/OR ISOAMYLENES FROM CAT POLY GASOLINE

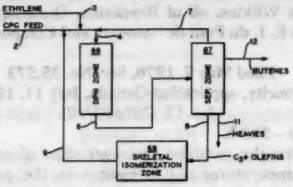
Robert L. Banks, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed June 1, 1970, Ser. No. 42,095

Int. Cl. C07c *3/62*

U.S. Cl. 260—683 D **7 Claims**

The conversion of cat poly gasoline to isobutene using an olefin disproportionation reaction is increased by subjecting a heavy olefin fraction separated from the olefin disproportionation effluent to skeletal isomerization prior to recycle of said fraction to the olefin disproportionation reactor. In a preferred embodiment, isoamylenes are advantageously



prepared using a second olefin disproportionation step which employs the isobutene-containing stream as the feedstock.

3,696,164

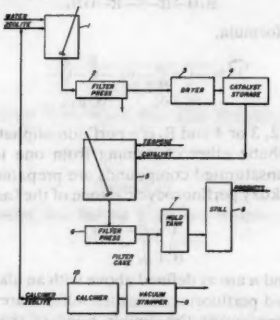
MOLECULAR SIEVE 13-X CATALYZED ISOMERIZATION OF ALPHA-PINENE-IMPROVEMENT OF CATALYST ACTIVITY

Curry Beach Davis, Panama City, Fla., assignor to Arizona Chemical Company, New York, N.Y.

Continuation-in-part of Ser. No. 845,431, July 28, 1969, abandoned. This application June 1, 1971, Ser. No. 148,898

Int. Cl. C07c *13/00*; C09f *3/02*; C01b *33/28*

U.S. Cl. 260—675.5 **5 Claims**



A method for producing dipentene is given whereby a terpene containing feed is isomerized at a temperature of between 140° and 200° C. in the presence of an alkali metal containing aluminosilicate catalysts of the 13X-type which has been activated by water extraction.

3,696,165

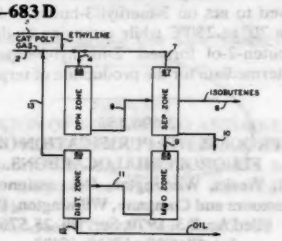
ISOBUTENE AND/OR ISOAMYLENES FROM CAT POLY GASOLINE

Robert E. Reusser, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed June 1, 1970, Ser. No. 42,092

Int. Cl. C07c *3/62*

U.S. Cl. 260—683 D **8 Claims**



The conversion of cat poly gasoline to isobutene using an olefin disproportionation reaction is increased by subjecting a heavier olefin fraction separated from the olefin disproportionation effluent to a high temperature treatment with MgO prior to recycle of said fraction to the olefin disproportiona-

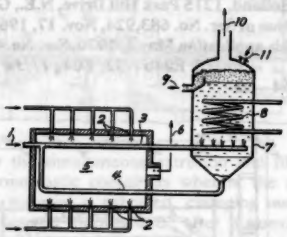
tion reactor. In a preferred embodiment, isoamylenes are advantageously prepared using a second olefin disproportionation step which employs the isobutene-containing stream as the feedstock.

3,696,166

METHOD OF THERMAL CRACKING OF HYDROCARBONS

Tokuji Ozawa, Sakai; Mikio Uyeda, Amagasaki; Ryosuke Hashimoto, Saitama, and Shigenori Suzuki, Osaka, all of Japan, assignors to Mitsui Shipbuilding and Engineering Co., Ltd., Tokyo, Japan

Filed June 15, 1970, Ser. No. 45,959
Int. Cl. C07c *3/00*
U.S. Cl. 260—683 R **6 Claims**



Thermal cracking apparatus in which the reaction transfer, quenching and separation are carried out in circulating molten metals which are maintained molten by circulation through a preheater tube prior to circulation through the reaction tube. The preheater tube and the reaction tube are heated by burners. Feed stock or a diluent such as steam is sprayed into the quenching tower through the reaction tube to assist the circulation.

3,696,167

CATALYST AND PROCESS FOR DEHYDROGENATING SATURATED HYDROCARBONS

Bernard Juguin, 46, avenue du Stade; Jean Francois Le Page, 6, rue Henri Dunant, both of 92 Rueil Malmaison, and Jean Miquel, 5, rue Fragonard, Paris XVIIeme, all of France

Filed March 30, 1970, Ser. No. 23,991
Claims priority, application France, April 4, 1969, 6910608
Int. Cl. C07c *5/18*; B01j *11/12*
U.S. Cl. 260—683.3 **20 Claims**

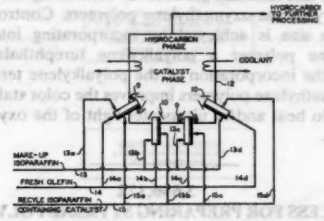
For dehydrogenating saturated hydrocarbons, there is provided a substantially neutral catalyst containing (a) alumina, (b) from 0.05 to 2 percent by weight of platinum, (c) from 0.01 to 0.5 percent by weight of at least one additional noble metal from the group consisting of iridium and ruthenium, the latter percentages being given with respect to alumina, wherein the content by weight of the additional noble metal is from 0.05 to 0.3 times the content by weight of platinum and (d) an alkali or alkaline-earth metal with a content by weight of from 0.3 to 10 times the overall content of noble metals, the specific surface of the catalyst being 1 to 20 sq. m. per gram and the neutralization heat of the alumina being below 5 calories per gram in the ammonia adsorption test. Of the above catalysts, the best are produced by introducing the alkali or alkaline-earth metal compound after the noble metals are introduced.

3,696,168

NOZZLE STRUCTURE AND ARRANGEMENT FOR PRODUCING HIGH OCTANE ALKYLATE

John W. Vanderveen, Bartlesville, Okla., assignor to Philips Petroleum Company

Filed Sept. 21, 1970, Ser. No. 73,790
Int. Cl. C07c *3/54*; B01j *1/00*
U.S. Cl. 260—683.58 **6 Claims**



A nozzle having several outlet orifices, including a centrally disposed orifice and at least one additional or subordinate orifice disposed adjacent to the first-mentioned orifice, is provided so that in an alkylation of an isoparaffin with an olefin the recycle isoparaffin which contains catalyst therein, usually hydrogen fluoride catalyst, can be brought into contact with hydrogen fluoride-free olefin feed at the moment when this feed encounters the main body of catalyst. Conduits are provided to supply recycle isoparaffin usually to the adjacent or subordinate nozzle, and make up isoparaffin and the olefin feed to the central or axial orifice.

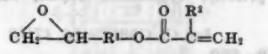
3,696,169

MODIFIED POLYOLEFIN CONTAINING REACTION PRODUCT OF UNSATURATED OXIRANE IN THE PRESENCE OF THE POLYOLEFIN AND PEROXIDE

Albert Schrage, E. Orange, and Philip D. Readio, Rockaway, both of N.J., assignors to Dart Industries Inc., Los Angeles, Calif.

Filed Oct. 16, 1970, Ser. No. 81,526
Int. Cl. C08g *45/04*
U.S. Cl. 260—836 **10 Claims**

A process has been developed for directly producing a modified polyolefin composition in particulate form which has improved adhesiveness. Generally, the process comprises providing an olefin polymer in particulate form; admixing the olefin polymer, an organic peroxide and a specific polymerizable compound generally defined by the formula



; reacting the mixture in an inert atmosphere at a temperature below the tacky point of the polymer; and directly recovering the modified polyolefin composition.

3,696,170

STABILIZED POLYMER COMPOSITIONS

Shinichi Ishida, Tokyo; Nobumitsu Yano; Noboru Ohshima, both of Iruma-gun, Saitama-ken; Hiromichi Eukuda, and Takeshi Sato, both of Itabashi-ku, Tokyo, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed June 3, 1969, Ser. No. 830,114
Claims priority, application Japan, June 4, 1968, 43/37878
Int. Cl. C08f *45/60*; C08g *51/60*
U.S. Cl. 260—858 **14 Claims**

Various polymers, such as polyacetal, polyolefine, polydiolefine, polyamide, polyurethane polyester, polyether, polyvinyl and polyhaloolefine are stabilized against heat, light and oxygen by adding thereto at least one pyrimidine base such as cytosine, cytidine and uracil.

3,696,171

POLYBUTYLENE TEREPHTHALATE-OXYMETHYLENE POLYMER COMPOSITIONS

David M. Braunstein, Edison, N.J., assignor to Celanese Corporation, New York, N.Y.

Filed Oct. 14, 1970, Ser. No. 80,765
Int. Cl. C08g *39/10*
U.S. Cl. 260—860 10 Claims

Process and resultant product for controlling the spherulite size of crystalline oxymethylene polymers. Control over the spherulite size is achieved by incorporating into the oxymethylene polymer a polyalkylene terephthalate. Additionally, the incorporation of the polyalkylene terephthalate into oxymethylene polymers improves the color stability when exposed to heat and/or ultraviolet light of the oxymethylene polymers.

3,696,172

PROCESS FOR PREPARING STYRENE POLYMERS HAVING A HIGH IMPACT STRENGTH

Isao Kaiho, Yokohama, Hiroshi Shimizu, Kawasaki, and Hiroshi Osuka, all of Japan, assignors to Nibon Polystyrene Kogyo Kabushiki Kaisha, Kanagawa, Japan

Continuation-in-part of Ser. No. 657,065, July 31, 1967, abandoned. This application Oct. 19, 1970, Ser. No. 82,193
Int. Cl. C08f *19/08, 1/11*
U.S. Cl. 260—880 R 8 Claims

Process for the production of high impact polystyrenic polymers comprising dissolving 3–10 parts by weight of a polybutadiene rubber and/or a styrene butadiene rubber in 100 parts of a styrenic monomer, polymerizing the solution under conditions of bulk polymerization in the absence of a catalyst or initiator until the solid content in the solution becomes from about 15 to 45 percent by weight, dispersing the polymerization product in water to provide an aqueous suspension, and polymerizing the aqueous suspension under the conditions of suspension polymerization in the presence of from 0.1 to 1 part by weight of t-butyl per-iso-butyrate and from 0.01 to 0.5 parts by weight of t-butyl peracetate.

3,696,173

GRAFT COPOLYMER OF VINYL CHLORIDE ONTO HIGH MOLECULAR WEIGHT POLYTETRAHYDROFURAN

Toshio Sakomura; Toshiro Yoshida; Yoshihiro Fujita, and Hideo Shinbara, all of Yamaguchi, Japan, assignors to Toyo Soda Manufacturing Co., Ltd., Yamaguchi-ken, Japan

Filed March 13, 1970, Ser. No. 19,502
Claims priority, application Japan, March 18, 1969, 44/20098
Int. Cl. C08f *29/24, 37/18*
U.S. Cl. 260—899 8 Claims

A method of preparing a clear, high impact strength vinyl chloride polymer is described.

Monomeric vinyl chloride is polymerized in a solution of high molecular weight polytetrahydrofuran therein to produce a graft-polymer which is transparent and has high impact strength.

A graft-polymer product having improved transparency and impact strength is also described.

3,696,174

Patent Not Issued For This Number

3,696,175

Patent Not Issued For This Number

3,696,176

PROCESS FOR ORGANOPHOSPHORUS VINYL ESTERS PRODUCTION

Thomas H. Colby, El Cerrito, Calif., assignor to Shell Oil Company, New York, N.Y.

Filed Aug. 13, 1970, Ser. No. 63,660
Int. Cl. C07f *9/02*
U.S. Cl. 260—986 5 Claims

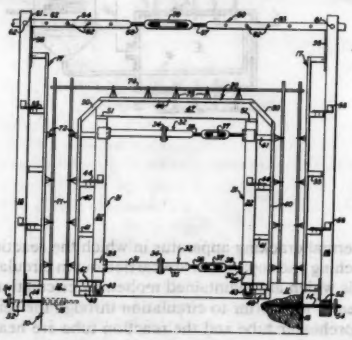
Lower beta, beta-dihalovinyl phosphate diesters are reacted with thionyl chloride in the presence of a salt compound containing cationic nitrogen to yield beta-halovinyl phosphorodichloridates, useful intermediates in the production of higher and/or mixed esters of beta, beta-dihalovinyl phosphates.

3,696,177

METHOD FOR FORMING CONCRETE BOX CULVERTS AND THE LIKE

Harry L. Holland, 1215 Park Hill Drive, N.E., Gainesville, Ga.

Continuation of Ser. No. 683,924, Nov. 17, 1967, abandoned. This application May 4, 1970, Ser. No. 48,792
Int. Cl. E04b *1/32*; E04g *11/34*
U.S. Cl. 264—32 5 Claims



Construction of a box culvert on an already-poured concrete base which includes a concrete riser at each edge thereof and studs encased in the base under the risers which extend horizontally outwardly therefrom by securing vertical wall forms to such studs so that the wall forms extend upwardly from the outer edges of the risers, connecting the upper edges of the wall forms together at their top by a longitudinal member of adjustable length, rolling interior mold apparatus between the risers and the vertical wall forms, such apparatus having vertical beams carrying vertical interior forms, the vertical beams being connected by expansible rods which force the interior vertical wall forms against the inner edges of the risers into an opposed relationship with the outer vertical wall forms, providing expansible rods connected to the vertical beams so as to maintain them and also the interior vertical wall forms in rigid parallel relationship, securing the outer vertical wall forms and the interior vertical wall forms together at their edges, securing a ceiling form across the upper edges of the interior vertical forms, pouring concrete into the space defined by the outer vertical wall forms and the interior mold apparatus to form the walls and top of the culvert, and when the concrete is sufficiently hardened, removing the forms by increasing the length of the longitudinal member securing the outer wall forms together, contracting the rods connecting the interior wall forms and moving the forms to the next station along the base to repeat the process.

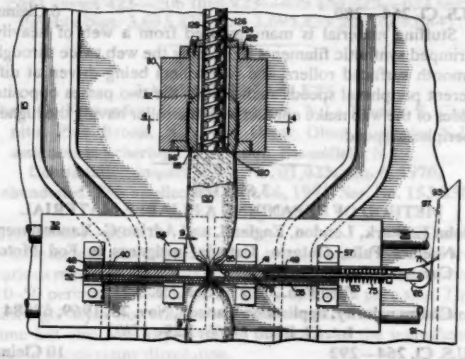
3,696,178

Patent Not Issued For This Number

3,696,179
EXTRUDING AND FILLING CONTAINERS MADE OF FOAMED THERMOPLASTIC POLYMER

William A. Jacobs, 514 Grassy Hill Road, Orange, Conn.

Continuation-in-part of Ser. No. 726,465, May 3, 1968, abandoned. This application Oct. 15, 1970, Ser. No. 81,099
Int. Cl. B29d 27/00
U.S. Cl. 264—45 9 Claims

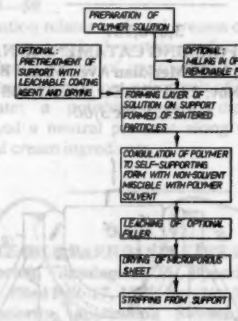


Method for the simultaneous extrusion and filling of expandable thermoplastic containers wherein the expandable thermoplastic material is extruded, clamping means gather and seal the foamed thermoplastic after it is extruded and while it is still in a state of plasticity so that the sealed area is formed by fusion of a foamed thermoplastic material, intermittently operated feed means fills the container after the seal is made and the substance being packaged causes inflation and shaping of the container, and clamp means is operative upon the deenergization of the feed means to effect a similar type seal for the other end of the container.

3,696,180
PROCESS FOR PREPARING MICRO-POROUS POLYURETHANE RESIN SHEETS BY CASTING THE RESIN ON A POROUS SINTERED THERMOPLASTIC POLYMERIC RESIN SUPPORT SURFACE

Victor Ralph Cunningham, and Thomas Stanley Dodson, both of Dagenham Dock, England, assignors to Porous Plastics Limited, Essex, England

Continuation of Ser. No. 620,659, March 6, 1967. This application May 11, 1970, Ser. No. 37,399
Claims priority, application Great Britain, Mar. 7, 1966, 9974/66; Jan. 11, 1967, 1610/67
Int. Cl. B29d 27/04
U.S. Cl. 264—48 2 Claims


PREPARATION OF POLYMER SOLUTION
OPTIONAL: PRETREATMENT OF SUPPORT WITH LEACHABLE COATING AGENT AND DRYING
OPTIONAL: MILLING IN OF REMOVABLE FILLER
FORMING LAYER OF SOLUTION ON SUPPORT FORMED OF SINTERED PARTICLES
COAGULATION OF POLYMER TO SELF-SUPPORTING FORM WITH NON-SOLVENT MISCIBLE WITH POLYMER SOLVENT
LEACHING OF OPTIONAL FILLER
DRYING OF MICROPOROUS SHEET
STRIPPING FROM SUPPORT

In a method of making artificial leathers and other water vapor permeable flexible sheet materials, a layer of polymer-containing mixture adhering to a temporary support is coagulated by suitable liquid treatment, dried, and then stripped from the support.

3,696,181
FLASH EXTURSION OF POLYVINYL CHLORIDE

Willard Hallam Bonner, Jr., Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 699,875, Sept. 22, 1967, Pat. No. 3,503,907. This application March 20, 1970, Ser. No. 21,454
Int. Cl. B29d 27/00
U.S. Cl. 264—53 2 Claims

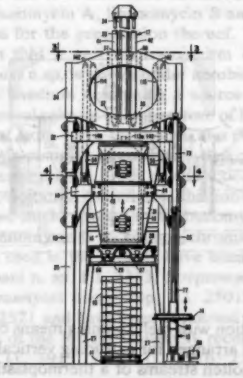
FORM PLIABLE SOLUTION OF PVC AT ELEVATED TEMPERATURE AND PRESSURE IN A SOLVENT HAVING BOILING POINT <100°C
EXTRUDE SOLUTION THROUGH ORIFICE INTO SUBSTANTIALLY LOWER PRESSURE REGION
FLASH EVAPORATION OF SOLVENT TO (1) OBTAIN A PVC FOAM, AND (2) QUENCH SYSTEM TO A TEMPERATURE ABOVE THE SOLVENT B.P., BUT <100°C

A flexible, low density foam of polyvinyl chloride having closed polyhedral-shaped cells and very thin cell walls of uniform thickness is produced by flash extruding a solution of the polymer in a methylene chloride solvent under conditions such that the temperature of the product immediately after extrusion is above the boiling point of the solvent, but below the stability temperature of the foam. The resultant foam material is useful as a cushioning material.

3,696,182
METHOD FOR PRODUCING CONCRETE PIPE

Carl R. Joelson, 312 Harbor Drive, Venice, Fla.

Division of Ser. No. 797,606, Feb. 7, 1969, Pat. No. 3,584,356. This application June 29, 1970, Ser. No. 60,172
Int. Cl. B28b 1/08, 21/00
U.S. Cl. 264—72 11 Claims



An improved method for forming hollow cylindrical bodies having any geometric cross-section of reinforced concrete comprising sequentially forming a mold with bottom, inner and outer wall forms and reinforcement positioned between the wall forms, which forms are assembled to provide a controlled pressure seal between the bottom form and the outer form and the bottom form and the inner form, filling the thus-formed mold with concrete while applying vibration to the thus-formed mold, positioning a top form on the filled form and applying vibration to same, stopping the applications of vibration and sequentially upwardly stripping the inner and outer wall forms from the molded body while leaving the bot-

tom and top forms on the molded body, the controlled pressure seals being liquid-tight and resisting the transmission of the vibrations between the mold forms.

3,696,183

FORMING A PILE ON AN ARTICLE

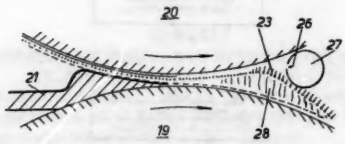
Margaret Lilian Steel, and William Telford Cross, both of Runcorn, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Oct. 30, 1970, Ser. No. 85,485

Claims priority, application Great Britain, Oct. 30, 1969, 52,365/69

Int. Cl. B29c *17/02*

U.S. Cl. 264—164 **19 Claims**



A process for producing a pile-surfaced article by pressing softened filament-forming thermoplastic polymeric material through a perforated web into contact with a heated surface to which the polymeric material sticks, parting the web and polymeric material from the heated surface so that filaments are produced and cooling the filaments to harden and disjoin them from the surface.

3,696,184

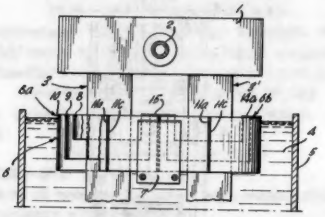
MELT SPINNING

Joseph W. Arnett, Jr., Severna Park, and David W. Norwood, Baltimore, both of Md., assignors to Concorde Fibers, Inc., Columbia, Md.

Filed June 8, 1970, Ser. No. 44,371

Int. Cl. D01d *5/08*

U.S. Cl. 264—178 F **8 Claims**



In combination with melt spinning means comprising a melt spinning head arranged for extruding vertically downwardly a plurality of molten streams of a thermoplastic and a bath arranged to receive the streams from the head and to contain a liquid to quench and thereby solidify the streams to form filaments, the improvement comprising annular baffle means suspended in the bath in a position to surround the plurality of molten streams or filaments as they move substantially vertically downwardly, the baffle means comprising a plurality of radially spaced concentric annular foraminous members each having its upper edge no lower than the surface of the liquid and the lower edge of each respective member extending to a distance from the surface of the liquid greater than the corresponding distance for any other of the members of smaller diameter and lesser than the corresponding distance for any other of the members of greater diameter.

3,696,185

PROCESS FOR THE MANUFACTURE OF A STUFFING MATERIAL

Robert Bolliand, and Claude Saligny, both of Lyon, France, assignors to Societe Rhodiaceta, Paris, France

Filed April 28, 1970, Ser. No. 32,778

Claims priority, application France, April 28, 1969, 6913378

Int. Cl. B29c *15/00, 17/02;* **D04h** *3/00*

U.S. Cl. 264—280 **6 Claims**

Stuffing material is manufactured from a web of heavily crimped synthetic filaments by passing the web twice through smooth surfaced rollers, the two rollers being driven at different peripheral speeds such that in the two passes opposite sides of the web make contact with the roller having the higher peripheral speed.

3,696,186

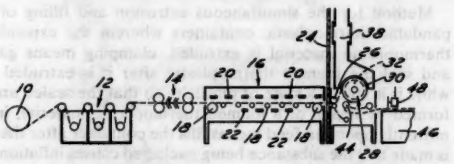
METHOD OF EXPANDING A PLIABLE MATERIAL

John E. Stark, London, England, and Adrian G. Vanoostveen, Niagara Falls, Ontario, Canada, assignors to Fod Motor Company, Dearborn, Mich.

Filed Feb. 3, 1970, Ser. No. 8,213

Claims priority, application Canada, Nov. 28, 1969, 68584

Int. Cl. B28b *11/08;* **B29c** *17/02*

U.S. Cl. 264—292 **10 Claims**

A method has the following general steps for expanding a continuous length of a pliable material so that originally parallel and straight lateral edges thereof are stretched to curved configurations of different arc lengths. A continuous length of the material is unwound and heated to a temperature at which the material is pliable. The material is expanded between a first line which is both located on a surface of a first object and perpendicular to the lateral edges of the material, and a second line which is located on a surface of a second object, which second line is coplanar with the first line but in skew relationship thereto. The expanded material is continuously moved along a substantial length of the second object's surface. The expanded material is cooled while in engagement with the second object's surface to a temperature at which the material is sufficiently rigid that it may be removed and cut to finite lengths to form the desired article.

3,696,187

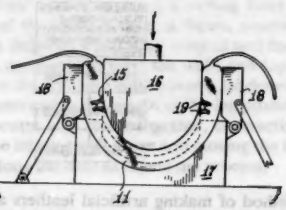
METHOD OF FORMING CATAMENIAL NAPKINS

Jacob A. Glassman, 1680 Meridian Ave., Miami Beach, Fla.

Filed Nov. 23, 1970, Ser. No. 92,108

Int. Cl. B29c *3/00*

U.S. Cl. 264—294 **3 Claims**



A method of forming a catamenial napkin into a longitudinal arch-shape with spaced parallel longitudinal channels on its concave surface defining between them a compacted tam-

pon-like central ridge. The method also includes the step of forming a central longitudinal channel on the convex surface to facilitate folding when in place on a wearer and the formation of a lateral crease inwardly of each end adapting the napkin to compact package and storing.

ERRATA

For Classes 423—206 thru 423—479 and 423—651 see: Patents Nos. 3,695,830 thru 3,695,839 and 3,695,841

3,696,188
LAMINATED TABLETS

Raul O. Fernandez, Upper Montclair, N.J.; Vincent F. Cannito, Pine Brook, N.J., and Oscar Olsen, Colonia, N.J., assignors to Schering Corporation, Bloomfield, N.J.

Continuation-in-part of Ser. No. 01,023, Jan. 6, 1970, abandoned. This application June 16, 1971, Ser. No. 153,856
Int. Cl. A61j *3/06*
U.S. Cl. 424—16 6 Claims

Laminated, pan-coated tablets are described wherein the various medicament layers are separated by a layer containing 10–50 percent of a silica gel having a specified pore size. This silica gel layer not only substantially reduces the processing time but also aids in preventing migration of the ingredients and in accelerating dissolution.

3,696,189
STABILIZED ANTIBIOTIC AND METHOD

Frank M. Snyder, 2043 N. 53rd St., Omaha, Nebr.

Filed May 18, 1970, Ser. No. 38,562
Int. Cl. A61k *21/00, 27/12*
U.S. Cl. 424—38 5 Claims

A stabilized antibiotic premix composition comprising antibiotic particles admixed with edible carrier particles wherein at least the antibiotic particles are coated with a thin layer of at least one glyceride.

3,696,190

Patent Not Issued For This Number

3,696,191
DENTAL CREAMS CONTAINING ENZYMES

Lloyd E. Weeks, St. Louis, Mo., assignors to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 797,227, Feb. 6, 1969, abandoned. This application Nov. 10, 1970, Ser. No. 88,437
Int. Cl. A61r *7/16*
U.S. Cl. 424—50 5 Claims

This invention relates to dental creams of improved stability containing enzymes and certain surfactants and polishing agents. A dental cream of improved stability comprises, for example, a surfactant, a potassium salt of β-(sulfo acetamido) ethyl laurate; a polishing agent, dicalcium phosphate dihydrate and a neutral protease along with other conventional dental cream ingredients.

3,696,192
PEPTIZABLE BARIUM SULFATE DENTIFRICE

Paul G. Embring, Vaksalagatan 35,, Uppsala, Sweden

Filed Feb. 17, 1970, Ser. No. 12,160
Claims priority, application Sweden, Feb. 27, 1969, 2666/1969
Int. Cl. A61r *7/16*
U.S. Cl. 424—52 7 Claims

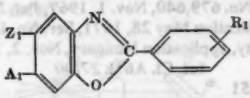
The specification describes dentifrices containing sodium fluoride and particles of barium sulfate coated with tribasic sodium citrate.

3,696,193
COSMETIC PREPARATION CONTAINING 2-PHENYL-BENZOXAZOLES

Leonardo Guglielmetti, Birsfelden, and Max Duennenberger, Frenkendorf, both of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

Continuation-in-part of Ser. No. 630,183, April 12, 1967, abandoned. This application June 2, 1971, Ser. No. 149,359
Claims priority, application Switzerland, April 21, 1966, 5811/66
Int. Cl. A61l *23/00*
U.S. Cl. 424—59 7 Claims

The invention relates to ultraviolet absorbers with a specific absorption range which makes them suitable for cosmetic uses. These ultraviolet absorbers correspond to the formula



where R_1 represents a hydrogen atom or an alkyl radical, one of the symbols A_1 or Z_1 is a sulphonic acid function and Z_1, when A_1 stands for one of the above-mentioned sulphonic acid functions, represents a hydrogen atom or an alkyl group, or conversely A_1 represents a hydrogen atom when Z_1 stands for one of these sulphonic acid functions.

3,696,194
ANTIBIOTIC SUBSTANCE LIBANOMYCIN

Giuseppe Cassinelli, Rivanazzo; Ernesto Cotta, Milan; Paolo Pennella, Milan, and Remo Faustini, Milan, all of Italy, assignors to Societa Farmaceutical Italian, Milan, Italy.

Continuation-in-part of Ser. No. 723,565, Apr. 23, 1968
Filed Jan. 9, 1970, Ser. No. 1,619
Claims priority, application Italy, April 28, 1967, 15470 A/67
Int. Cl. A61k *21/00*
U.S. Cl. 424—115 6 Claims

Described are the new antibiotic substance libanomycin, consisting of libanomycin A, libanomycin B and libanomycin C, and a process for the preparation thereof. The process is characterized in that a new microorganism of the species *Streptomyces libani* n.sp. is grown under aerobic conditions in a liquid cultural medium containing a source of carbon, of nitrogen and mineral salts, at a temperature of from 22° to 37° C, for a period of from 72 to 160 hours, at a pH of from 5 to 8.8. The antibiotic complex libanomycin thus obtained is isolated from the fermentation broth by extraction with suitable solvents and precipitation therefrom. The antibiotic complex may be separated in the three forms libanomycin A, libanomycin B and libanomycin C by column chromatography. The microorganisms used in the process have been designated as *Streptomyces libani* n. sp. F.I. 2343, *Streptomyces libani* n.sp. F.I. 2399, *Streptomyces libani* n.sp. F.I. 2501, *Streptomyces libani* n.sp. F.I. 2521 and have been deposited at the Institute of Microbiology of the Rutger University receiving the index numbers I.M.R.U. 3915, I.M.R.U. 3916, I.M.R.U. 3917, I.M.R.U. 3918.

3,696,195
STABLE AQUEOUS STEROID PHOSPHATE SOLUTIONS

Giovanbattista Crivellaro, and Bruno Crestani, both of Milan, Italy, assignors to Gruppo Lepetit S.P.A., Milan, Italy

Filed May 6, 1970, Ser. No. 35,236
Claims priority, application Italy, May 7, 1969, 16446-A/69
Int. Cl. A61k *9/00*
U.S. Cl. 424—175 9 Claims

Pharmaceutical compositions suitable for parenteral administration, consisting of aqueous solutions of steroid 21-

phosphate esters stabilized with a compound selected from thioglycerol and thioglycolic acid.

3,696,196

Patent Not Issued For This Number

3,696,197

PHARMACEUTICAL COMPOSITIONS CONTAINING HOMOPYRIMIDAZOLE DERIVATIVES

Zoltan Meszaros; Jozsef Knoll, and Peter Szentmiklosi, all of Budapest, Hungary, assignors to Chinoin Gyogyszen es Vegyeszeti Termekek Gyara, Budapest, Hungary

Division of Ser. No. 679,640, Nov. 1, 1967, Pat. No. 3,585,198. This application May 28, 1971, Ser. No. 148,199
Claims priority, application Hungary, Nov. 2, 1966, 670
Int. Cl. A61k *27/00*
U.S. Cl. 424—251 **1 Claim**

Analgesic and antipyretic 3-carbalkoxy or 3-carbethoxy-6,7,8,9-tetrahydro-4H-pyrido [1,2a] pyrimidin-4-ones which also have a narcosis potentiating effect.

3,696,198

TREATMENT OF ANOXIA WITH 3,5-DIALKYL HYDANTOINS

Frederick J. McCarty, 3208 W. Bruce Drive, Dresher, Pa., and Frank P. Palopoli, 811 Hilldale Road, Glenside, Pa.

Filed April 2, 1970, Ser. No. 25,274
Int. Cl. A61k *15/22*
U.S. Cl. 424—273 **3 Claims**

3,5-Diloweralkyl hydantoins have the property of prolonging the life of animals subjected to a hypoxic environment or suffering from anoxia.

3,696,199

USE OF 2-ARYL-3-ALKYLAMINOACRYLONITRILES AS FUNGICIDES

Jerry G. Strong, Westfield, N.J., assignor to Mobil Oil Corporation

Filed Sept. 25, 1970, Ser. No. 75,757
Int. Cl. A01n *9/20*
U.S. Cl. 424—304 **20 Claims**

Certain 2-aryl-3-alkylaminoacrylonitriles form a new class of fungicides. They are highly effective as soil fungicides against Fusarium oxysporium, Pythium debaryanum, Rhizoctonia solani and Sclerotium rolfsii.

ELECTRICAL

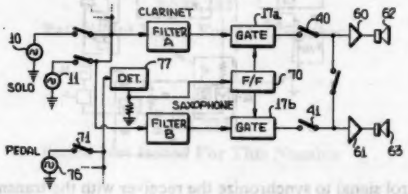
3,696,200
AUTOMATIC SEQUENTIAL VOICING

David A. Bunger, Cincinnati, Ohio, assignor to D. H. Baldwin Company, Cincinnati, Ohio

Division of Ser. No. 664,745, Aug. 31, 1967, Pat. No. 3,549,777. This application Oct. 27, 1970, Ser. No. 84,301. The portion of the term of this patent subsequent to Dec. 22, 1987, has been disclaimed.

Int. Cl. G10h *1/02*

U.S. Cl. 84—1.03 **8 Claims**



System for sounding two organ voices and/or footages reiteratively in alternation. Several embodiments are provided as follows:

1. Tone is applied via a key switch to two tone color filters in parallel and outputs of the filters are applied in alternation to a loudspeaker or to separate loudspeakers.

2. Two footages are applied to distinct tone color filters and the outputs of these applied reiteratively in alternation to a loudspeaker or to separate loudspeakers.

3. Two footages of the same tone color are applied reiteratively in alternation to a loudspeaker or to separate loudspeakers.

4. Three or more tones are applied in sequence via different tone color filters to a loudspeaker.

5. Solo tones proceed via one tone filter so long as pedal notes are not called for. When pedal note is played solo tone proceeds via a different tone filter.

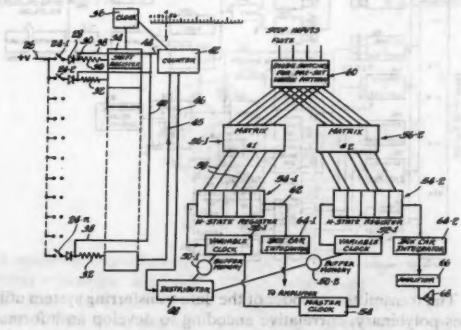
3,696,201
DIGITAL ORGAN SYSTEM

Alvan Donald Arsem, and Harold O. Schwartz, both of North Tonawanda, N.Y., assignors to The Wurlitzer Company, Chicago, Ill.

Filed Nov. 12, 1970, Ser. No. 88,650

Int. Cl. G10h *5/00*

U.S. Cl. 84—1.01 **33 Claims**



An electronic keyboard musical instrument, specifically an organ, in which the position of one or more keys depressed is indicated by a corresponding one or more binary numbers, which in turn respectively control variable clocks. The outputs of the variable clocks are applied to shift registers the outputs of which are applied to boxcar integrators to provide audio frequency outputs.

3,696,202
OPTICAL SYSTEM FOR A COLOR TELEVISION CAMERA

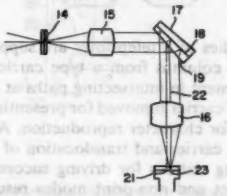
Minoru Mori, and Toshiro Kishikawa, both of Ohmiya, Japan, assignors to Fuji Shashin Koki Kabushiki Kaisha, Saitama-ken, Japan

Filed Oct. 8, 1970, Ser. No. 79,110

Claims priority, application Japan, Oct. 16, 1969, 44/83039

Int. Cl. H04n *9/06*

U.S. Cl. 178—5.4 ST **7 Claims**



A color television camera, comprising a taking lens, an image tube having a photoelectric surface, a monochrome stripe filter positioned at the focal point of said taking lens, a relay lens to form the light passing through said filter into a parallel light, dichroic means having three dichroic surfaces for separating the light from said relay lens into three color lights and directing said respective color lights at angles slightly from each other, and a second relay lens for focussing the ray pencil from said dichroic means on the photoelectric surface of said image tube.

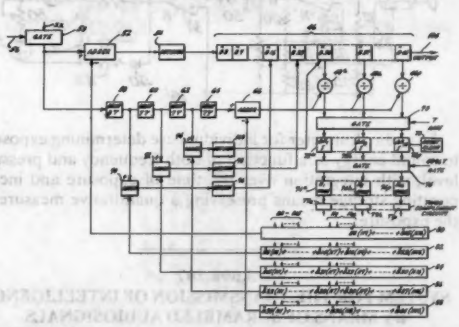
3,696,203
ADAPTIVE MODEM RECEIVER

Jay F. Leonard, Ambler, Pa., assignor to Philco-Ford Corporation, Philadelphia, Pa.

Filed June 3, 1970, Ser. No. 43,125

Int. Cl. H04l *15/24*

U.S. Cl. 178—88 **3 Claims**



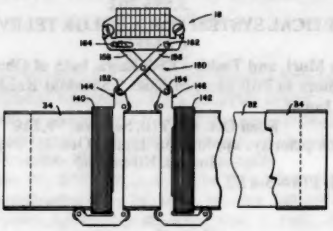
A modem receiver which provides a measure of transmission channel signal distortion characteristic without the need of transmitted reference pulses by generating in succession progressively more refined estimates of the proper form of received signal, correlating the best estimate of the received signal with a signal representative of signal channel distortion generated over many symbol periods, and utilizing the results of said correlation to form said progressively more refined estimates.

3,696,204

TYPE CARRIER ASSEMBLY

Alan G. Wallskog, Prospect Heights, Ill., assignor to Teletype Corporation, Skokie, Ill.

Filed May 28, 1970, Ser. No. 41,335
Int. Cl. H04l *15/24, 15/34, 17/16*
U.S. Cl. 178—27 **14 Claims**



Drivable type dies of a teleprinter are supported in intersecting rows and columns from a type carrier which is arranged for adjustment in intersecting paths at successive stations to which the carrier is moved for presenting any selected die in a position for character reproduction. Adjustment and movement of the carrier and translocation of an impeller to successive printing stations for driving successively selected dies between print and non-print modes results from magnetomotive phenomena generated by a linear electric motor.

3,696,205

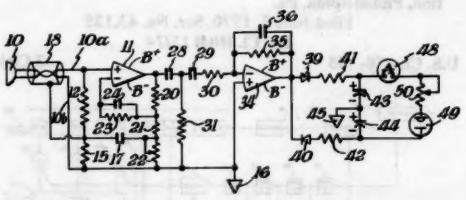
Patent Not Issued For This Number

3,696,206

AUDIO DOSIMETER

Edward S. Ida; Alfred Lechner, both of Newark, and James L. Parsons, Wilmington, all of Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 27, 1970, Ser. No. 93,167
Int. Cl. G10l *1/00*; G01b *3/12*
U.S. Cl. 179—1 N **2 Claims**



An audio dosimeter for individual use determining exposure to sound energy as a function of both frequency and pressure level, with integration over the time of exposure and incorporating storage means preserving a quantitative measure of the exposure.

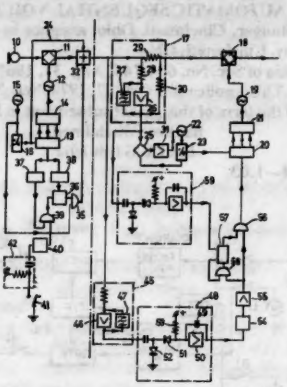
3,696,207

SYSTEM FOR THE TRANSMISSION OF INTELLIGENCE BY MEANS OF SCRAMBLED AUDIOSIGNALS

Seth Johan Ronald Lundin, Vallingby, and Bengt Harry Bjorkman, Sollentuna, both of Sweden, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 5, 1970, Ser. No. 34,728
Claims priority, application Sweden, May 14, 1969, 6920/69; May 14, 1969, 6921/69
Int. Cl. H04m *1/70*
U.S. Cl. 179—1.5 S **6 Claims**

A system for the transmission of intelligence signals by means of scrambled audio signals comprising a transmitter, that employs the frequency shift generator to also produce a control signal that is added to the scrambled audio signals to be transmitted to the receiver. The receiver separates the control signal from the scrambled audio signals and employs this



control signal to synchronize the receiver with the transmitter thereby effecting the demodulation of the scrambled audio signals by the receiver.

3,696,208

Patent Not Issued For This Number

3,696,209

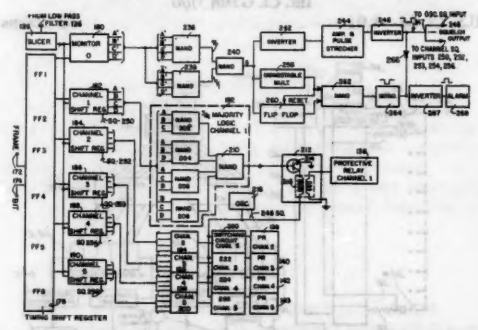
Patent Not Issued For This Number

3,696,210

DATA TRANSFERRING SYSTEM UTILIZING A MONITOR CHANNEL AND LOGIC CIRCUITRY TO ASSURE SECURE DATA COMMUNICATION

James W. Peterson, Elmhurst, and John A. Tempka, Glenview, both of Ill., assignors to Motorola, Inc., Franklin Park, Ill.

Filed Aug. 6, 1970, Ser. No. 61,729
Int. Cl. H04j *3/00*
U.S. Cl. 179—15 BF **22 Claims**



The transmitter-encoder of the data transferring system utilizes polybinary, correlative encoding to develop an information carrying signal, which includes a monitor signal having a known data code, and data from a plurality of sources. The encoding techniques facilitates redundant bit transmission in a constrained bandwidth. The receiver-decoder includes monitor channel logic circuitry which determines whether the decoded signal is free from error. Moreover, each of the data

decoding channels utilizes majority logic to verify that a particular control initiating signal is being received before the control signal is applied to data utilization devices associated therewith. If one error is detected in the monitor signal, the data channels are squelched for a first predetermined period of time thus preventing erroneous control signals from being applied to the utilization devices. If more than one error is detected in the monitor signal within a second predetermined period of time the data channels are squelched for a third predetermined period of time and an alarm is activated by the monitor channel-logic circuitry. As a result, the system provides security against abnormal transmission characteristics.

3,696,211

Patent Not Issued For This Number

3,696,212

Patent Not Issued For This Number

3,696,213

Patent Not Issued For This Number

3,696,214

Patent Not Issued For This Number

3,696,215

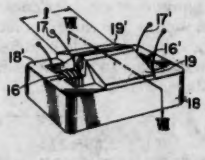
Patent Not Issued For This Number

3,696,216

SCANNING MAGNETIC HEAD

Hiroshi Sugaya, Suita, and Kenji Kanai, Osaka, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed June 25, 1970, Ser. No. 49,740
Claims priority, application Japan, July 2, 1969, 44/53631
Int. Cl. G11b *5/20, 5/30, 5/02*
U.S. Cl. 179—100.2 C **11 Claims**



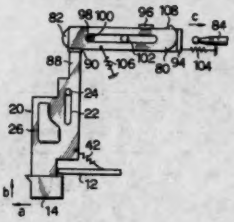
A scanning magnetic head with a closed magnetic circuit including a head gap impressed with a recording signal magnetic field. A pair of closed magnetic circuits respectively including a part of the closed magnetic circuit are provided on the opposite sides of the head gap. The magnetic head is impressed with a pair of symmetrical form of the scanning magnetic fields on the opposite sides thereof so that the influence of the scanning magnetic field on the recording medium may be reduced.

3,696,217

DEVICE USING A RECORDING JACK FOR PREVENTING ERASURE OF RECORDED INFORMATION FROM MAGNETIC TAPE IN A TAPE RECORDER

Kazuyasu Motoyama; Ryoichi Sawaki, and Takeaki Nakamura, all of Tokyo, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Aug. 12, 1970, Ser. No. 63,072
Claims priority, application Japan, Aug. 14, 1969, 44/63882
Int. Cl. G11b *5/54, 15/04*
U.S. Cl. 179—100.2 D **8 Claims**



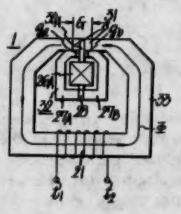
A device for preventing information recorded on the magnetic tape of a tape recorder from being inadvertently erased. The device comprises a first slidable lever having an erasing head, a second slidable lever having a recording and reproducing head for selective movement together with said first lever for recording, or, independently of the first lever, a slidable stop lever for releasing and returning the first and second levers to their initial inoperative positions and locking mechanism for locking the first lever and being controlled and released by a recording jack or recording and reproducing connector.

3,696,218

MAGNETIC FLUX-RESPONSIVE HEADS

Saburo Uemura, Yokohama, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Aug. 31, 1970, Ser. No. 68,327
Claims priority, application Japan, Sept. 4, 1969, 44/70116
Int. Cl. G11b *5/34;* **G01r** *33/02*
U.S. Cl. 179—100.2 CF **6 Claims**

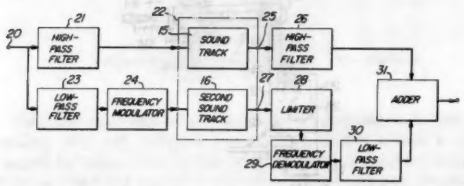


An improved dual-gap magnetic flux-responsive head which can be used not only for detecting reference magnetizations previously formed but also for making the reference magnetizations on a magnetic medium. The improved head has respective coil members on its magnetic core and yoke assembly for producing magnetic flux to detect the magnetizations and to make the magnetizations.

3,696,219
CONTACT-COPYING METHOD FOR REPRODUCING A MAGNETIC TAPE

Ichiro Arimura, Kyoto, and Kouzo Kurashina, Moriguchi, both of Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Oct. 8, 1970, Ser. No. 79,078
Claims priority, application Japan, Oct. 14, 1969, 44/82448; Oct. 29, 1969, 44/87041; Oct. 29, 1969, 44/87051; Dec. 11, 1969, 44/99947
Int. Cl. G11b 5/86, 5/44, 5/04
U.S. Cl. 179—100.2 E 6 Claims

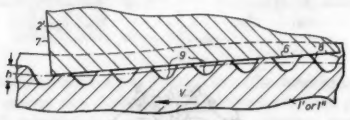


Contact-copying method for producing a tape copied from an original tape comprising the steps of modulating with a high-frequency carrier those low-frequency components of the information signals to be recorded which cannot be efficiently copied on the tape by the contact-copying method, recording the modulated signal on the original tape, laminating the original tape with the tape to be copied so that the magnetic surfaces of both tapes are in close contact with each other, and impressing a magnetic field on the lamination of both tapes thereby transfering the recorded signal on the original tape to the tape to be copied.

3,696,220
RECORD DISC HAVING ELASTIC DEFORMATION BY THE PICKUP

Gerhard Dickopp, Berlin, Germany, assignor to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Germany

Filed Nov. 5, 1970, Ser. No. 87,064
Int. Cl. G11b 3/10, 3/70
U.S. Cl. 179—100.4 R 8 Claims



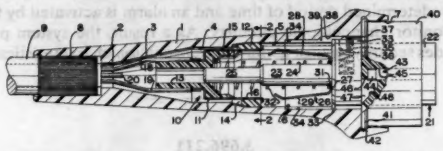
A record disc containing grooves whose walls undulate to constitute a spatial representation of the time variation of a signal to be reproduced by means of a pressure responsive playback head carrying a stylus which engages in the groove and elastically deforms the groove walls to a substantial degree, the resulting elastic restoring force being sensed by the head, the disc having a modulus of elasticity of no more than 10,000 Kgf/cm².

3,696,221
Patent Not Issued For This Number

3,696,222
LATCHABLE RECIPROCATING SWITCH CONSTRUCTION

John P. Langan, Detroit, and Charles R. Cobbeldick, Garden City, both of Mich., assignors to Essex International Inc.

Filed Sept. 9, 1970, Ser. No. 70,821
Int. Cl. H01h 3/20, 9/20
U.S. Cl. 200—16 R 13 Claims

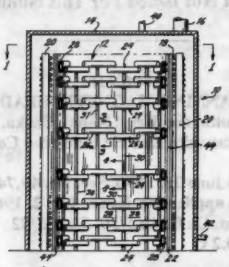


A switch having an axially reciprocable actuator movable from a projected position to a number of retracted positions and return, and which carries conductive elements engageable and disengageable with fixed contacts in response to movements of the actuator. The actuator normally is latched in its projected position in which none of the conductive elements engage the contacts, but operating means is provided for releasing the latch and simultaneously shifting the actuator to an intermediate or partially retracted position in which engagement between at least one of the conductive elements and the fixed contacts is effected, and from which the actuator is movable to its fully retracted position. As the actuator is moved to its fully retracted position at least one of the conductive elements is deflected so as to disengage it and the fixed contacts.

3,696,223
SUSCEPTOR

James F. Metcalf, Willingboro, and Robert H. Klingerman, Medford Lakes, both of N.J., assignors to Cragmet Corporation, Rancocas, N.J.

Filed Oct. 5, 1970, Ser. No. 77,789
Int. Cl. H05b 5/00
U.S. Cl. 219—10.49 12 Claims



A susceptor for inclusion in an inductive heating system is built up from a plurality of modules consisting of rings of conductive material such as graphite. The modules are assembled so as to define a susceptor made of rings or similar structure spaced one from the other so that the susceptor structure has a substantially reduced mass.

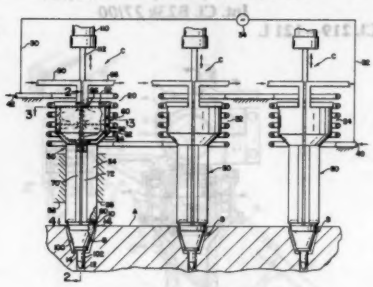
3,696,224
TRANSFORMER & INDUCTOR UNIT FOR HEATING VALVE SEATS

John C. Lewis, Wentworth, Ontario, Canada, assignor to Park-Ohio Industries Inc., Cleveland, Ohio

Filed June 9, 1971, Ser. No. 151,496
Int. Cl. H05b 5/00, 9/02; H01f 21/06
U.S. Cl. 219—10.57 3 Claims

An induction heating device for inductively heating the conical surface of a valve seat in an engine block for subsequent quench hardening including a fixed multi-turn trans-

former primary winding having a central opening and a carrier having both the secondary of the transformer and the inductor mounted thereon wherein the carrier is selectively shiftable



between a first position with the inductor spaced away from the valve seat and a second position with the inductor magnetically coupled to the valve seat and with the secondary then within the primary.

3,696,225

APPARATUS FOR THERMAL TREATMENT OF METAL PARTS BY ELECTRIC INDUCTION HEATING

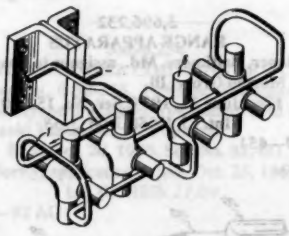
Veniamin Davidovich Kalner; Anatoly Georgievich Orlovsky, Grigory Arkadievich Ostrovsky, Alexandr Moiseevich Ryskind, Victor Nikolaevich Semenov, Anatoly Loginovich Stepin, Mikhail Andreevich Surov, Konstantin Zakharovich Shepelyakovsky, and Isaak Nakhimovich Shklyarov, all of Moscow, U.S.S.R., assignors to Moskovisky dvazhdy ardena Lenina i ordena Trudovogo Krasnogo Znameni Avtomobilng Zavod imeni I.A. Likhacheva, Moscow, U.S.S.R.

Filed June 10, 1970, Ser. No. 45,005

Claims priority, application U.S.S.R., June 17, 1969, 1336662

Int. Cl. H05b *69/06*

U.S. Cl. 219—10.79 **4 Claims**



The present invention relates to an apparatus for heat treating metallic work pieces and local electric tempering of in particular cross members of universal joints, the apparatus comprising an inductor effect electric induction heating of the work-pieces.

According to the present invention, the inductor of such an apparatus includes a pair of serially connected sections, each section including at least two electric conductors lying in a plane and connected for electric current to flow therealong in opposite directions, the plane of the conductors of one section intersecting the plane of the other section at substantially right angles.

3,696,226

HELICAL SEAM FOLLOWER AND WELDER

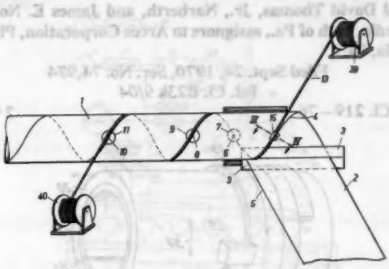
Adalbert Sablotny, Hagen-Vorhalle, Germany, assignor to Hoesch Aktiengesellschaft, Dortmund, Germany

Division of Ser. No. 769,579, Oct. 22, 1968, Pat. No. 3,557,335. This application Sept. 16, 1970, Ser. No. 72,882

Claims priority, application Germany, Oct. 27, 1967, P 16 52 938.1

Int. Cl. B23k *11/02*

U.S. Cl. 219—62 **1 Claim**



Apparatus of producing or testing with a welding or testing instrument welded spiral-seamed tubes formed of a steel band, which comprises rolling a steel band in a continuous spiral so as to form a rotating tube-shaped body; placing on the steel band at a constant spacing from an edge of the steel band extending toward a given welding location thereon, a premagnetized tape containing a ferromagnetic material adhering to the steel band and carrying a marking line disposed parallel to the edge of the steel band; sensing the marking line and regulating in accordance therewith the orientation of at least one of the welding and testing instruments with respect to the edge of the steel band so that the instrument and the given welding location are momentarily in registry as the tube-shaped body rotates; and withdrawing the premagnetized tape from the steel band after the steel band edge of the tube-shaped body has rotated past a second one of the instruments in the travel direction of the steel band edge; and apparatus for carrying out the method.

3,696,227

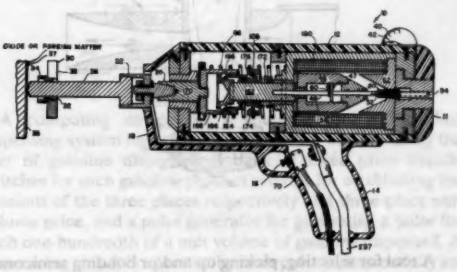
STUD WELDING GUN METHOD

Carl M. Wenrich, Reading, and Bernard W. Downs, Elverson, both of Pa., assignors to Weld-Record Corporation, Reading, Pa.

Continuation of Ser. No. 820,797, May 1, 1969, which is a division of Ser. No. 424,743, Jan. 11, 1965, Pat. No. 3,456,090. This application Sept. 21, 1970, Ser. No. 74,101

Int. Cl. B23k *9/20*

U.S. Cl. 219—99 **3 Claims**



A method for operating a stud welding gun having a reciprocable stud supporting chuck mounted on an actuating shaft, which method involves forcibly accelerating the shaft forwardly by electro-magnetic means to strike the work and penetrate any surface coating thereon to make metallic con-

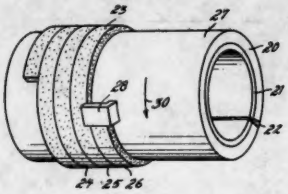
tact before applying welding current through the chuck and stud, and after a short time period, applying full welding current while retracting the stud from the work to draw an arc, and thereafter interrupting the welding current and moving the stud into the molten metal to form a "soft plunge" and weld.

3,696,228

PRESSURE VESSEL AND METHOD OF MAKING

Royal David Thomas, Jr., Narberth, and James E. Norcross, Media, both of Pa., assignors to Arcos Corporation, Philadelphia, Pa.

Filed Sept. 24, 1970, Ser. No. 74,974
Int. Cl. B23k 9/04
U.S. Cl. 219—76 **2 Claims**



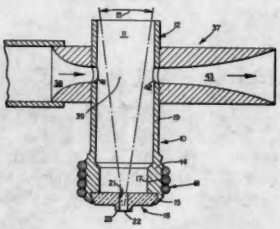
A pressure vessel with corrosion resistant lining and inexpensive overall is constructed in two steps. First a thin-walled vessel is prepared from integrally clad plate by conventional means, the cladding thus being of controlled quality, thickness and well bonded to the backing metal. Then the thickness of the backing metal is built up to the desired dimension preferably by electroslag deposition in the continuous casting process. The electroslag layer bonds to the backing layer without penetrating to the inner layer, and thus preserves the corrosion resistance of the lining. Heavy tube sheets are prepared in similar manner by depositing additional backing metal behind a clad metal plate.

3,696,229

BONDING TOOL FOR THROUGH THE TOOL OBSERVATION BONDING AND METHOD OF BONDING

Thomas L. Angelucci, 89 Charlaan Circle, Cherry Hill, N.J., and Frederick W. Kulicke, Jr., 3840 Oak Road, Philadelphia, Pa.

Filed April 14, 1970, Ser. No. 28,338
Int. Cl. B23k 1/04
U.S. Cl. 219—85 **13 Claims**



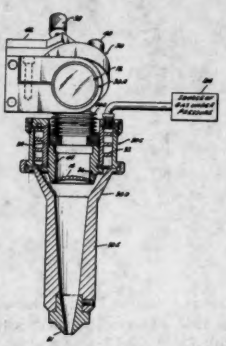
A tool for selecting, picking up and/or bonding semiconductor devices to a substrate or carrier, said tool having a bonding wedge which has a central observation window permitting the operator or scanner to simultaneously observe the bonding tool, the connection points on the semiconductor device and the conductors on the substrate or carrier to which the connection points are attached.

3,696,230

LASER LENS COOLING AND CLEANING SYSTEM

Howard R. Friedrich, Woodland Hills, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Jan. 19, 1970, Ser. No. 3,627
Int. Cl. B23k 27/00
U.S. Cl. 219—121 L **4 Claims**



The beam from a laser is focused, by means of a lens, onto a material which is to be burned thereby. The lens is supported in a housing which, among other functions, operates as a heat sink for the lens. Further, the housing is shaped so that a gas which is applied, from a source under pressure, to the housing, cools the housing, flows over the lens surfaces, and thereafter is directed at the location where the burning occurs to insure that none of the products resulting therefrom can reach the surface of the lens, and also to either assist the burning operation of the laser beam, or to confine it. Since the gas which is introduced into the housing is at a pressure greater than atmosphere it prevents its entrance into the housing of any particles that may dirty the laser lens or a mirror which is disposed in the housing to reflect the lens beam towards the material.

3,696,231

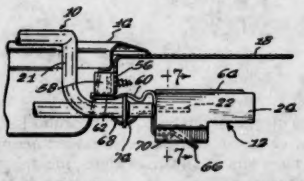
Patent Not Issued For This Number

3,696,232

RANGE APPARATUS

Fred G. Salinger, Baltimore, Md., assignor to Baxter Laboratories, Inc., Morton Grove, Ill.

Filed June 11, 1971, Ser. No. 152,301
Int. Cl. H05b 3/08, 3/68
U.S. Cl. 219—451 **13 Claims**



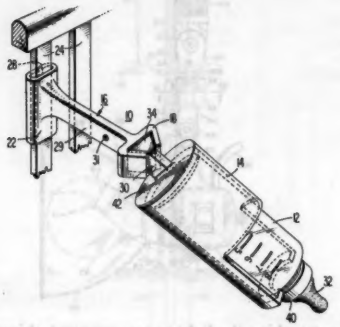
An electric surface unit which is removable from the electric range yet also capable of movement between a horizontal position of operation and an inclined non-operative position. The movement between positions being permitted by implementation of a terminal receptacle carried by the range and providing a bracket socket for intercooperation with an element on the sheath of said surface unit.

3,696,233

HOLDER DEVICE FOR INFANT'S NURSING BOTTLE

Gary Raymond Pulsifer, 11 Keven Lane, East Greenbush, N.Y.

Filed April 6, 1970, Ser. No. 25,861
Int. Cl. H05b 1/00; A47d 15/00
U.S. Cl. 219—535 22 Claims



A novel infant-feeding device comprising a receptacle member and means for holding the receptacle member in proximity to the infant. The receptacle member includes an opening whereby the bottle can be introduced therein and a slotted end wall portion, in which slot the neck portion of the bottle nests, the slot width being less than the diameter of the main body portion of the bottle. The feeding device can further comprise a cover member that is adapted to be removably disposed on the receptacle member such that the opening at the receptacle member is substantially completely closed. The cover member includes a slotted wall portion, the slot being located such that it is in substantial register with the slot of the receptacle member when the cover member is disposed thereon.

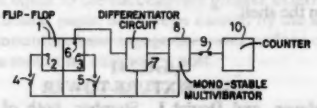
The receptacle member may be provided with electrical resistance heating means, the above-mentioned cover member, and/or a sheet of heat insulating material (including heat reflecting material) on a surface thereof to maintain the nursing bottle and its contents at an elevated temperature. Also, the cover member may be provided with such a sheet of heat insulating material.

3,696,234

WORD NUMBER COUNTING DEVICE

Emiko Yamashita, 6-50-315, 1-chome, Akabanedai, Kita-ku, Tokyo, and Kyohei Fujimoto, Yokohama, both of Japan, assignors to said Yamashita, by Fujimoto

Filed Oct. 20, 1970, Ser. No. 82,441
Claims priority, application Japan, Oct. 25, 1969, 44/85009
Int. Cl. H03k 21/04
U.S. Cl. 235—92 AC 2 Claims



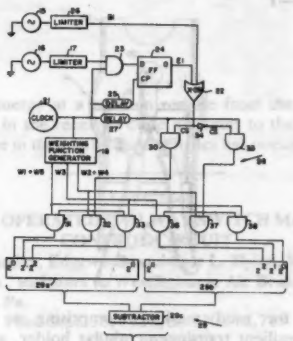
A word number counting device to be used in conjunction with a typewriter comprising an electronic circuit activated to advance a counter upon the depression of at least one of the type keys after the depression of either the space bar or carriage return or line space lever.

3,696,235

DIGITAL FILTER USING WEIGHTING

Donald W. Tufts, East Greenwich, R.I.; Ralph E. Burt, Reeds Ferry; Victor I. Davis, Jr., Milford, both of N.H.; James F. Queenan, Lowell; Richard A. Maloon, Chelmsford, both of Mass., and David W. Waterman, Amherst, N.H., assignors to Sanders Associates, Inc., South Nashua, N.H.

Filed June 22, 1970, Ser. No. 48,398
Int. Cl. G06f 7/38
U.S. Cl. 235—156 3 Claims



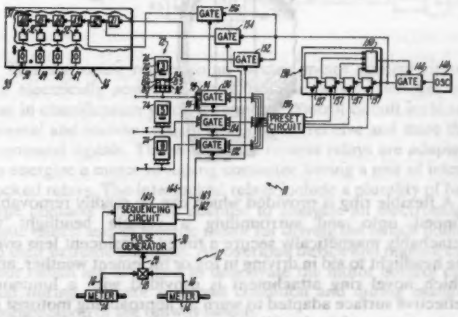
Digital filter apparatus in which a set of weighting signal samples to be multiplied in the filter has values which are exactly powers of two such that the filter multiplier network may be comprised of simple signal routing circuits.

3,696,236

COMPUTING DEVICE

Crawford M. Kus, Vernon, Conn., assignor to Veeder Industries Inc., Hartford, Conn.

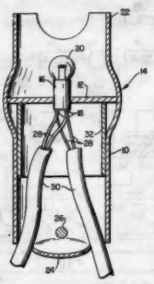
Filed Aug. 17, 1970, Ser. No. 64,278
Int. Cl. G06f 15/56, 7/52
U.S. Cl. 235—151.34 16 Claims



A computing device for a multiple product gasoline dispensing system having a cost counter for accumulating the cost of gasoline dispensed, a bank of three price decade switches for each gasoline product settable for establishing the amounts of the three places respectively of a three place unit volume price, and a pulse generator for generating a pulse for each one-hundredth of a unit volume of gasoline dispensed. A sequencing circuit is operated by each pulse to sequentially set a binary predetermining counter at the straight binary complement of the amount established by each decade switch for the gasoline product being delivered and an oscillator is gated to index the predetermining counter from such setting to a maximum count and simultaneously index the cost counter to

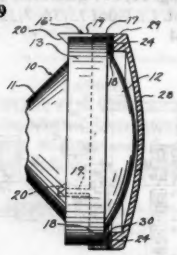
enter such amount into the cost counter at a level corresponding to its order of significance in the unit volume price.

3,696,237
ROAD MARKINGS
Bernard Whitehead, 25 N. Park Road, Bradford 9, England
Filed Jan. 7, 1970, Ser. No. 1,206
Claims priority, application Great Britain, Jan. 11, 1969, 1,758/69
Int. Cl. F21
U.S. Cl. 240—1 **8 Claims**



A lamp for road marking comprising a deformable preferably resilient translucent tubular holder, a lamp bulb within the holder being carried by a rigid transverse mounting disc preferably force fitted within the holder so as to provide an externally dilated wall portion wherein the disc is longitudinally retained. The lamps may be mounted in spaced hazard cones with the bulbs connected in parallel.

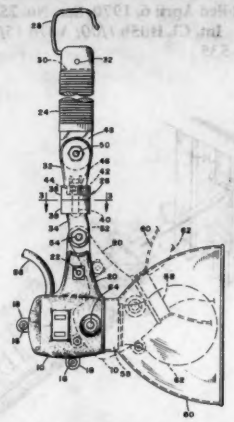
3,696,238
DUAL PURPOSE LUMINOUS HEADLIGHT SAFETY RING AND FOG LENS ATTACHMENT MEANS
Ronald Szymanski, 19019 W. Coffee Road, New Berlin, Wis.
Filed Oct. 21, 1970, Ser. No. 82,689
Int. Cl. F21v *9/08*
U.S. Cl. 240—46.59 **1 Claim**



A flexible ring is provided which can be readily removably clipped onto and surrounding a vehicle headlight to detachably magnetically secure a tinted translucent lens over the headlight to aid in driving in fog or inclement weather, and which novel ring attachment is provided with a luminous reflective surface adapted to warn an approaching motorist in the event one of the headlights on the vehicle is burned out or inoperative, as well as alerting oncoming motorists of the location of a parked car at night, thus permitting the advantageous use of said ring device even without said removable fog lens.

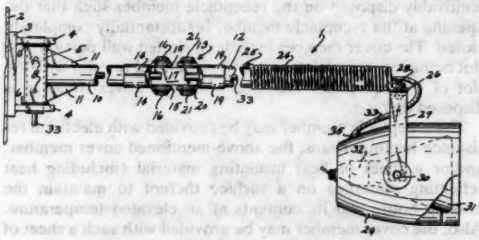
3,696,239
MECHANIC'S LIGHT
James J. Duddy, 154 Medcalf St., Lima, Ohio
Filed June 3, 1971, Ser. No. 149,730
Int. Cl. F21l *15/20*
U.S. Cl. 240—52.3 **4 Claims**

A mechanic's light comprising an electric light socket connected by a swivel connection to one end of a handle-like member to permit pivotal movement between the socket and member about axes extending transversely to each other. The opposite end of the handle-like member has a hook connected



thereto for attaching the light to a convenient object for support thereby and permit precise adjustment of the socket to project light accurately onto a desired area or object.

3,696,240
LIGHT FIXTURE FOR A LOADING DOCK
Roderick B. Potter, Milwaukee, Wis., assignor to Kelley Company, Inc., Milwaukee, Wis.
Filed July 23, 1970, Ser. No. 57,511
Int. Cl. F21s *1/02*
U.S. Cl. 240—73 BJ **8 Claims**

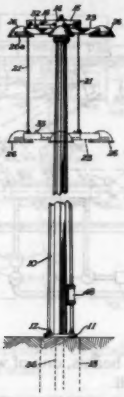


A light fixture for a loading dock. The light fixture includes an inner arm which is mounted for pivotal movement with respect to a fixed support, and an outer arm is pivotally connected to the outer end of the inner arm by a tubular coupling. A shell in which a light bulb is mounted is connected to the outer arm by a tension spring which provides shock absorbing characteristics for the shell. The arms are arranged to pivot in a common plane from an extended position in which the outer arm is located in axial alignment with the inner arm to a retracted or folded position in which the outer arm is located parallel to the inner arm. An electrical cord extends through the hollow inner arm, through a passage in the coupling, through the hollow outer arm and spring and is connected to the bulb in the shell.

3,696,241
LIGHT FIXTURE TOWER
Roy E. Meyer, and Daniel L. Stember, both of Red Wing, Minn., assignors to Meyer Manufacturing, Inc., Red Wing, Minn.
Filed July 16, 1970, Ser. No. 55,416
Int. Cl. F21s *3/10*
U.S. Cl. 240—84 **7 Claims**

A tower and support for mounting electric light fixtures at elevations up to and exceeding 100 feet above ground level;

the fixtures being supported on a separate fixture frame supported on cables confined within the tower and to be lowered for maintenance and service work on the fixtures; the power



supplying cable being anchored to the counterweight and traveling upwardly with the counterweight and support cables and being detachably connected to the power source at the base of the tower.

3,696,242

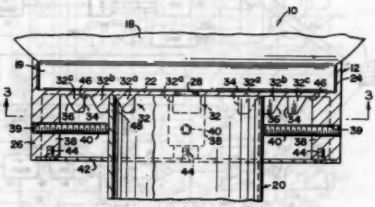
CONNECTOR FOR A POST-MOUNTED LIGHTING FIXTURE

Leon R. Patry, 3977 Medina Road, Medina, Ohio

Filed June 15, 1971, Ser. No. 153,253

Int. Cl. F21s *1/12*; F21v *3/02*

U.S. Cl. 240—84 **10 Claims**



A mounting base for attaching a lighting fixture to the end of a round or square tubular post. The mounting base has a flat wall on which the lamp socket is mounted and a downwardly extending apron. The lower surface of the wall is provided with a plurality of series of lugs with the lugs of each series being radially aligned with one another and located a successively greater distance from the center of the plate. The radially inner faces of the lugs are substantially perpendicular to the flat wall and are spaced radially from the center of the wall by distances equal to the successively greater external diameters of the tubular posts. Set screws carried by the apron portion of the mounting base engage the outer surface of the post to clamp the mounting base to the post.

3,696,243

BROKEN RAIL DETECTOR

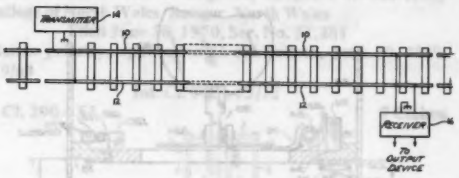
Richard E. Risely, Riverside, Calif., assignor to Marquardt Industrial Products Co., Cucamonga, Calif.

Filed Aug. 26, 1970, Ser. No. 67,076

Int. Cl. B61l *23/04*

U.S. Cl. 246—121 **12 Claims**

Herein described is apparatus for detecting a broken rail in a pair of railroad rails. The apparatus includes a transmitter which provides pulses of a predetermined code to a relay which intermittently, according to the code, applies electrical energy to each track at different polarities. A receiver receives



the coded energy at a position remote from the transmitter and change in the received code indicates to the transmitter that a change in the track characteristics has occurred.

3,696,244

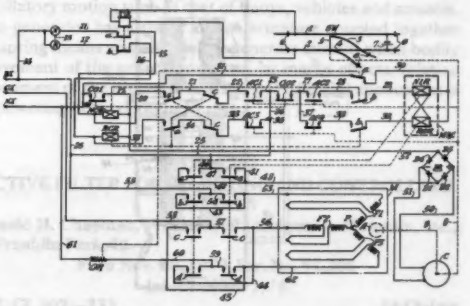
POWER OPERATED RAILWAY SWITCH MACHINE CONTROL CIRCUIT

David H. Hamley, Edgewood, and Lyle L. Hylen, Wilkinsburg, both of Pa., assignors to Westinghouse Air Brake Company, Swissvale, Pa.

Filed Sept. 30, 1970, Ser. No. 76,719

Int. Cl. B61l *5/00*

U.S. Cl. 246—242 **9 Claims**



This disclosure relates to an electric motor control circuit for electrically power operated trailable railway switches for use in classification yards. The motor control circuit includes normal and reverse control relays which receive and store the command signals. The normal and reverse relays are adapted to energize a motor reversing contactor having a pair of interlocked relays. The interlocked relays include a plurality of bar type contacts which are adapted to energize an electromagnetic clutch and an electric motor for driving the switch points to their extreme positions. An overload device and manual cutout switch are arranged to deactivate the motor control circuit during a motor overload condition and during manual manipulation of the railway switch.

3,696,245

VIEWING SCREEN MECHANISM FOR ELECTRON MICROSCOPE

George William Browning, Gt. Chesterford, England, assignor to Associated Electrical Industries Limited, London, England

Filed April 28, 1970, Ser. No. 32,749

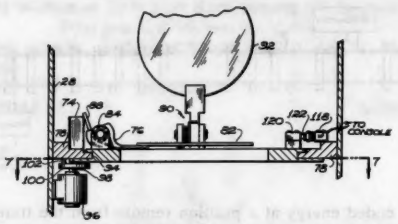
Claims priority, application Great Britain, June 17, 1969, 30,656/69

Int. Cl. H01j *37/26*; G01n *23/00*

U.S. Cl. 250—49.5 E **12 Claims**

An electron microscope comprising a microscope chamber having a viewing screen positioned within the chamber and

mounted for movement to at least a first position away from a beam of electrons or a second position in which electrons passing through an object or specimen are intercepted by the



viewing screen to thereby produce an image. A drive motor is coupled to the viewing screen for moving the screen to either the first or the second position.

3,696,246

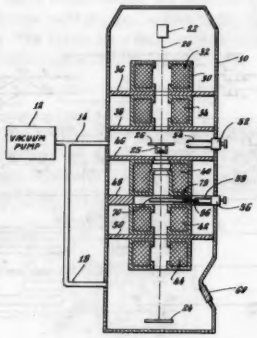
SPECIMEN ANALYSIS IN AN ELECTRON MICROSCOPE

Robert Buchanan, Los Altos, Calif., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Aug. 25, 1970, Ser. No. 66,787

Int. Cl. H01j *37/26*; G01n *23/00*

U.S. Cl. 250—49.5 A **1 Claim**



A specimen which is to be analyzed is initially introduced to an electron microscope housing at a location along the electron beam path between the objective lens and subsequent projection lenses in order to provide a smaller magnification relative to the magnification provided with the specimen in the normal object plane of the objective lens, but which provides greater mechanical facility in effecting the entry and removal of the specimen from the housing. While entry at this location results in less magnification of the specimen and image resolution, it is nonetheless suitable for a survey of the specimen in order to determine the adequacy of the specimen for analysis at the object plane.

3,696,247

VEHICLE EXHAUST EMISSIONS ANALYZER

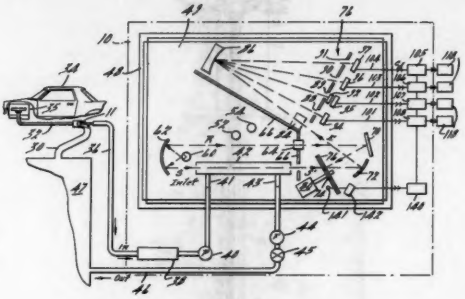
Lionel D. McIntosh, 2101 Lufkin Drive, N.W., Huntsville, Ala., and Daniel E. Weber, 6421 Marsh Ave., both of Huntsville, Ala.

Filed Nov. 12, 1970, Ser. No. 88,784

Int. Cl. G01j *3/42*; G01n *21/12, 21/26*

U.S. Cl. 250—83.3 H **11 Claims**

An infrared absorption analyzer for measuring the concentration of CO, CO_2, H-C and NO in a stream of vehicle exhaust emissions passing through the same sampling cell. The analyzer employs a single source of infrared radiation and a double beam optical comparator system, which is common to and shared by all of the measuring channels, and a dispersive type spectrophotometer, which has a plurality of exit slits and a single entrance slit through which it is alternately excited by



respective ones of the beams, one of which passes through the sampling analytical cell.

3,696,248

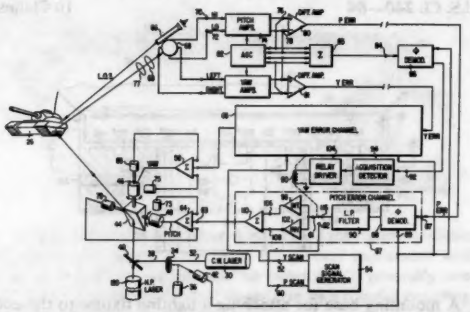
LASER TRACKING METHOD AND APPARATUS

Robert A. Cunningham, Lake Park, and John T. Winkler, Orlando, both of Fla., assignors to Martin Marietta Corporation, New York, N.Y.

Filed Aug. 26, 1970, Ser. No. 66,955

Int. Cl. G01j *1/20*

U.S. Cl. 250—203 R **19 Claims**



A device and method for remotely positioning a device utilized to illuminate a remote target. The illuminating device is scanned until illumination is detected in the field of view of a detector sighted on the remote target. On acquisition of the illumination, the scan signals are replaced by error signals related to the departure of the detected illumination from the target sight axis and the illuminating device positioned responsively thereto.

3,696,249

DETAIL BOUNDARY DETECTION SYSTEMS

John Kent Bowker, Marblehead, Mass., assignor to Itek Corporation, Lexington, Mass.

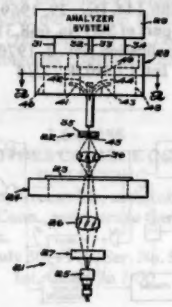
Filed Sept. 14, 1970, Ser. No. 71,816

Int. Cl. H04j *39/12*

U.S. Cl. 250—220 M **26 Claims**

Disclosed are detection systems that systematically scan given areas of an object to locate detail boundaries therein. The systems compare radiant energy levels emanating from

two-dimensionally spaced apart sub-divisions of each scanned area so as to produce an output signal that represents energy



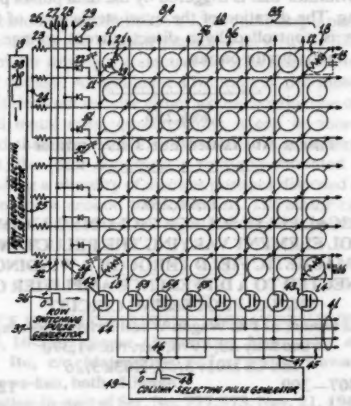
level gradients but is independent of gradient orientation with respect to the direction of scan.

3,696,250

SIGNAL TRANSFER SYSTEM FOR PANEL TYPE IMAGE SENSOR

Paul Kessler Weimer, Princeton, N.J., assignor to RCA Corporation

Filed Sept. 17, 1970, Ser. No. 72,944
Int. Cl. H01j *39/12*
U.S. Cl. 250—220 MX **14 Claims**



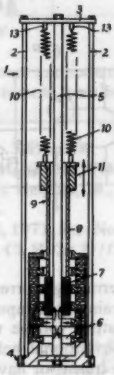
The image information producing photosensitive elements of the sensor, which are arranged in rows and columns, are addressed row-by-row and column group-by-column group to decode the information. The signal information from a group of elements in a row is impressed simultaneously upon a like group of signal processing circuits, with each of which is associated a pair of signal storage devices, each having an input gate and an output gate. The input gates for one set of corresponding storage devices are concurrently operated to impress a group of signals simultaneously upon these storage devices during a given time period while the output gates for the other set of corresponding storage devices are operated sequentially to transfer the signals stored in the other set of storage devices to the output circuit. The operation of the input and output gates is reversed in the succeeding time period and this alternating operation continues until the information from all of the sensor elements is transferred to the output circuit.

3,696,251

METHOD OF GENERATING ELECTRICITY AND ELECTRICAL GENERATOR

James David Last, Llanfairfechan, and David N. E. Rowe, Great Baddow, both of England, assignors to University College of North Wales, Bangor, North Wales

Filed June 30, 1970, Ser. No. 51,281
Claims priority, application Great Britain, June 30, 1969, 33019/69
Int. Cl. F03b *13/12*
U.S. Cl. 290—53 **7 Claims**



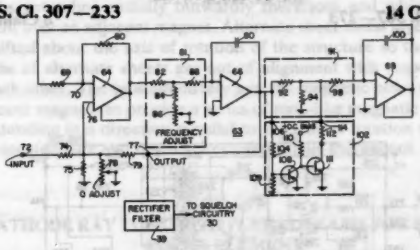
An electric generator for deriving electrical energy from oscillatory motion such as that of buoys, vehicles and animals. The generator has a stator and an armature coupled together by spring means and effective to generate current when bodily movement of the generator causes, by inertia effects, relative movement of the armature and stator. Particular application is in powering oceanographic buoys.

3,696,252

ACTIVE FILTER FOR SELECTING AND CONTROLLING SIGNALS

Ronald H. Chapman, Wheaton, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Nov. 20, 1970, Ser. No. 91,306
Int. Cl. H03k *1/16*
U.S. Cl. 307—233 **14 Claims**

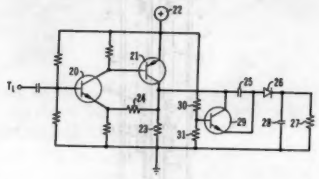


The signal control circuit utilizes an active, bandpass filter having a first resonant frequency virtually equal to the frequency of a first input signal selected thereby. An amplitude responsive circuit changes the resonant frequency of the filter to a second predetermined value during the times that the instantaneous magnitude of the output signal, provided in response to the first input signal, exceeds a threshold level. This action maintains the amplitude of the output signal at a substantially constant level even though the amplitude of the first input signal is varying. Moreover, the threshold level and second resonant frequency are chosen so that the phase difference between the first input signal and the output signal remains relatively constant even though the frequency of the first input signal is varying so that the output signal can be damped out by a second input signal having a selected phase relationship to the first input signal.

3,696,253
PEAK-TO-PEAK ALTERNATING CURRENT SIGNAL DETECTOR

Cecil Winston Deisch, Wheaton, Ill., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed June 7, 1971, Ser. No. 150,346
Int. Cl. H03k 5/20
U.S. Cl. 307—235 2 Claims

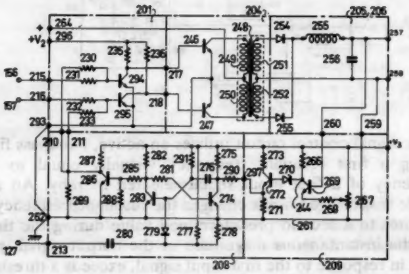


A peak-to-peak alternating current signal detector for reducing the current drain of the input supply and improving the accuracy of the output voltage regulation. The parallel diode rectifier of a conventional half-wave voltage doubler circuit is replaced by a transistor having its emitter-collector circuit connected across the series capacitor of the doubler. Instead of depending upon the quiescent bias of the supply to provide the extensive current demanded to discharge the series capacitor during one of the alternations of the applied signal, the latter capacitor is discharged through the emitter-collector circuit of the transistor.

3,696,254
MONOSTABLE MULTIVIBRATOR

Gianni Bertolini, and Mario Vinsani, both of Milan, Italy, assignors to Olivetti-General Electric S.p.A., Caluso (Torino), Italy

Division of Ser. No. 876,207, Dec. 1, 1969, Pat. No. 3,588,666, which is a continuation of Ser. No. 639,495, May 18, 1967, abandoned. This application June 26, 1970, Ser. No. 59,857
Int. Cl. H03k 3/284
U.S. Cl. 307—273 8 Claims

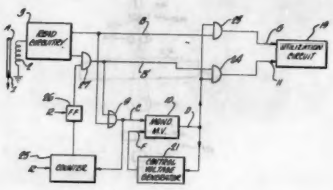


A monostable multivibrator circuit is disclosed which provides variable duration voltage pulses linearly proportional to a variable control source. A capacitor, precharged to the voltage of the variable control source, determines the time duration of the unstable state for the monostable multivibrator circuit.

3,696,255
BINARY DATA HANDLING SYSTEM

Chia-Cheng King, Thousand Oaks; Arnold J. Jorgensen, San Jose, and Michael I. Behr, South Pasadena, all of Calif., assignors to Burroughs Corporation, Detroit, Mich.

Division of Ser. No. 888,144, Dec. 29, 1969, abandoned, which is a continuation-in-part of Ser. No. 668,319, Sept. 18, 1967, abandoned. This application Nov. 2, 1970, Ser. No. 86,324
Int. Cl. H03k 17/16
U.S. Cl. 307—241 12 Claims



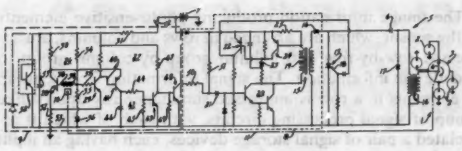
Phase encoded binary data is recorded on a storage medium such as magnetic tape. In reading the data from the medium, a read signal is produced that includes data pulses at regular intervals and phase pulses between at least some of the data pulses. Upon the occurrence of each data pulse, a blanking pulse of shorter duration than the interval between data pulses is generated. The read signal is transmitted to a utilization circuit only in the absence of blanking pulses. As the interval between data pulses changes due to variations in transport speed of the medium, the width of the blanking pulses changes proportionately so the ratio of the duration of the blanking pulses to the interval between data pulses remains constant. Specifically, the blanking pulses are generated by a monostable multivibrator that is triggered by the data pulses produced in reading. The duration of the quasi-stable state of the multivibrator is controlled by a direct-current voltage derived from the multivibrator output.

3,696,256
Patent Not Issued For This Number

3,696,257
ELECTRICAL PULSE SOURCE INCLUDING A MOVABLE CONTROL ELEMENT VARYING THE RELUCTANCE OF A MAGNETIC FIELD THROUGH A WINDING CONNECTED TO A DIFFERENCE AMPLIFIER OF A SIGNAL PROCESSING CIRCUIT

Charles L. Shano, 321 E. Wagon Wheel Drive, Phoenix, Ariz.

Filed May 28, 1970, Ser. No. 41,370
Int. Cl. H01v 5/00; H03k 3/26
U.S. Cl. 307—309 12 Claims



A pair of parallel connected transistors have a common input bias network with one of the transistors having its input connected to such bias network through a coil wound on a soft magnetic pole of a permanent magnet to provide a trigger source for actuating an ignition circuit for an internal combustion engine. A small rectangular magnetic disc of a ferrous metal is mounted on the distributor shaft and rotates past the end of the coil magnet. The flux changes generate a sharp voltage change at the time that the peak of the disc moves past the magnetic pole and an output voltage appears across the col-

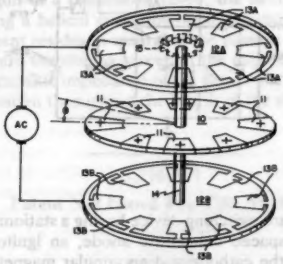
lectors of the transistors. A third transistor has its input elements connected to the collectors. A timing network connects the third transistor to a control transistor, the output of which is connected to turn off a normally "on" switching transistor. The switching transistor establishes a square-wave output triggering signal to actuate the ignition system. The timing network prevents false conduction of the control transistor and establishes an unambiguous control of the precise timing and firing point.

3,696,258

ELECTRET MOTORS CAPABLE OF CONTINUOUS ROTATION

Wilmer C. Anderson, Greenwich, and Robert W. Windebank, Fairfield, both of Conn., assignors to General Time Corporation, Phoenix, Ariz.

Filed July 30, 1970, Ser. No. 59,513
Int. Cl. H02n *1/00*
U.S. Cl. 310—5 **12 Claims**



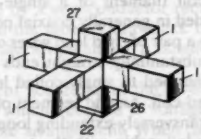
An electric motor comprises a rotor including a plurality of electret portions and a stator including an array of fixed electrode pairs for driving the electret rotor in response to an applied AC voltage. A significant advantage of this motor is the fact that it does not require either wound conductive coils or a laminated metal core; consequently, it can be more easily fabricated than typical prior art motors. In a preferred embodiment, the rotor comprises a rotatably mounted circular disc including a plurality of electret portions disposed at equal angular intervals around the rotor disc. The stator can comprise a pair of fixed discs, having a plurality of opposing electrode portions.

3,696,259

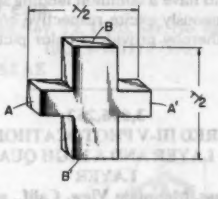
DEVICE FOR DISTRIBUTING VIBRATORY ENERGY

Eiji Mori, 10-35, 2 chome, Chokayama, Meguro-ku, and Katsuhiko Ito, c/o Matsushita, 317, Futako, Kawasaki-shi, Kanagawa-ken, both of Japan

Continuation-in-part of Ser. No. 777,573, Nov. 21, 1968. This application Nov. 4, 1970, Ser. No. 86,928
Claims priority, application Japan, Dec. 25, 1967, 42/082855; March 25, 1968, 43/018954
Int. Cl. H04r *17/00*; H01v *9/00*
U.S. Cl. 310—8 **13 Claims**



A device for distributing vibratory energy comprising a pair of transmission elements joined together in a perpendicular relationship and a transducer positioned such that when the transducer is operable at a vibrational frequency, a displacement node of a standing wave is formed at the junction of the



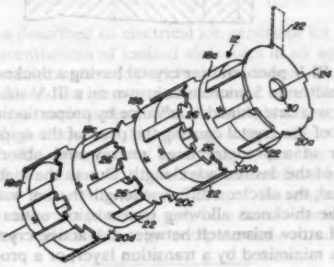
elements and a displacement antinode is formed at an extremity of the second element remote from said junction.

3,696,260

PERMANENT MAGNET ROTOR STRUCTURE

Melvin A. Lace, Prospect Heights, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Aug. 2, 1971, Ser. No. 168,243
Int. Cl. H02k *21/12*
U.S. Cl. 310—156 **5 Claims**



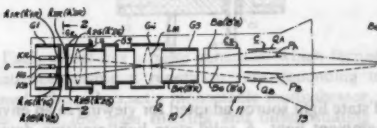
A rotor structure for a permanent magnet alternator includes a plurality of alternate laminations of circular ceramic magnets polarized through the thickness thereof and thin circular sheets of iron. The polarity of the magnets is reversed in alternate layers. The iron sheets each include a plurality of tabs extending radially outwardly therefrom and which are bent over an adjacent magnet. Alternate sheet metal layers are shifted about the axis of rotation of the structure so that the tabs of alternate sheets are out of alignment with respect to each other. The tabs effectively join the magnetic poles of adjacent magnets to provide a series of strip-like magnetic poles extending in a direction parallel to the axis of rotation of the rotor structure and spaced circumferentially thereabout.

3,696,261

CATHODE RAY TUBE WITH PLURAL BEAMS FOR EACH COLOR ELEMENT

Senri Miyaoka, 22-405 Fujisawa-jutaku, 13 Fujigaoka 1, Kanagawa-ken, Fujisawa-shi, Japan

Filed Aug. 24, 1970, Ser. No. 66,283
Claims priority, application Japan, Aug. 23, 1969, 44/66582
Int. Cl. H01j *31/20, 29/80, 29/56*
U.S. Cl. 313—69 C **8 Claims**



A color picture or cathode ray tube is provided with a single-gun generating a plurality of groups of electron beams

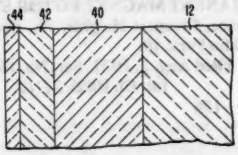
which are all focused on the color phosphor screen by a common electron lens with all of the beams preferably passing through the optical center of such lens, and the beams of each group are made to have a common landing spot on the screen so as to simultaneously excite respective color phosphors of the screen and thereby provide a color picture of enhanced brightness.

3,696,262

MULTILAYERED III-V PHOTOCATHODE HAVING A TRANSITION LAYER AND A HIGH QUALITY ACTIVE LAYER

George A. Antypas, Mountain View, Calif., assignor to Varian Associates, Palo Alto, Calif.

Filed Jan. 19, 1970, Ser. No. 3,661
Int. Cl. H01j *39/16, 39/06*
U.S. Cl. 313—94 **7 Claims**



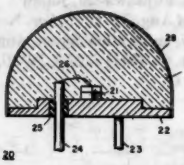
A thin III-V photoemitter crystal having a thickness ranging from 1 micron to 5 microns as grown on a III-V substrate. The bandgap was determined in advance by proportioning the constituents of the crystal causing the peak of the response curve to occur at a predetermined energy and absorb incident photons of the desired wavelength. Due to the high quality of the crystal, the electron diffusion length thereof was comparable to the thickness allowing transmission optics to be employed. Lattice mismatch between the active crystal and the base was minimized by a transition layer, or a progression of transition layers, of intermediate composition. The presence of this strain relieving structure permitted the growth of the thin, high quality single crystal having a relatively long electron diffusion length. As a specific example, a 20 micron transition layer of $GaAs_{.90}Sb_{.10}$ was epitaxially grown on a GaAs substrate. A three micron active layer of $GaAs_{.85}Sb_{.15}$ was grown over the transition layers. This composition of the active layer exhibited a bandgap energy of 1.17 ev corresponding to an absorption wavelength of 1.06 microns.

3,696,263

SOLID STATE LIGHT SOURCE WITH OPTICAL FILTER CONTAINING METAL DERIVATIVES OF TETRAPHENYLPORPHIN

Paul Wacher, Bayside, N.Y., assignor to General Telephone & Electronics Laboratories Incorporated

Filed May 25, 1970, Ser. No. 40,940The portion of the term of this patent subsequent to Jan. 25, 1989, has been disclaimed.
Int. Cl. H01j *5/08*
U.S. Cl. 313—108 D **12 Claims**



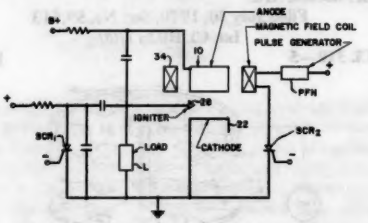
A solid state light source adapted for viewing in an environment of ambient light. A solid state light-emitting device is provided for emitting a narrow band of visible light. An optical filter is disposed in the path between the light emitting device and the viewer. The filter is a polymeric matrix which contains at least one metal derivative of tetraphenylporphin. In a preferred embodiment of the invention the polymeric matrix is an acrylic ester polymer which overlays the transparent encapsulating surface of a red-emitting GaAsP diode.

3,696,264

MAGNETICALLY MODULATED VACUUM ARC DIODE

Richard J. Clark, Jr., San Jose, Calif.; Harry Veron, Acton, Mass.; Alexander S. Gilmour, Jr., and David L. Lockwood, both of Williamsville, N.Y., assignors to Cornell Aeronautical Laboratory, Inc., Buffalo, N.Y.

Filed June 24, 1970, Ser. No. 49,473
Int. Cl. H01j *1/50*
U.S. Cl. 313—160 **6 Claims**



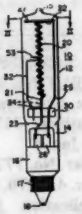
A vacuum arc switching device having a stationary cathode, a stationary spaced concentric anode, an ignitor electrode spaced from the cathode and an annular magnetic field coil concentric with and spaced from the anode.

3,696,265

COMPACT SINGLE-ENDED INCANDESCENT LAMP HAVING IMPROVED FILAMENT MOUNT ASSEMBLY

Jack Martin, Paramus, and Joseph S. Gorecki, West Caldwell, both of N.J., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Nov. 4, 1970, Ser. No. 86,844
Int. Cl. H01k *1/18, 1/50*
U.S. Cl. 313—222 **9 Claims**

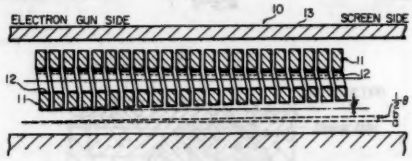


The coiled-coil filament of a single-ended halogen type lamp is suspended in generally coaxial position within a tubular envelope by a pair of rigid lead wires of unequal length that have smooth substantially straight ends which are slip-fitted into and hot clamped to singly-coiled legs provided at each end of the coiled-coil. An end segment of the longer lead wire is bent into a transversely-extending loop which is disposed in loose nesting relationship with the top of the bulb and thus also serves as an integral mount-positioning-and-bracing means. An optional bridge and anchored auxiliary support wire for the filament provide additional shock-proof protection. The simplicity of the resulting mount structure reduces the manufacturing cost of the lamp without affecting lamp quality or performance.

3,696,266
ELECTRON BEAM DEFLECTING DEVICE

Tsutomu Nishino, and Yuuji Mogi, both of 1006, Oaza Kadoma, Kadoma, Osaka, Japan

Filed Sept. 16, 1970, Ser. No. 72,696
Claims priority, application Japan, Sept. 19, 1969, 44/76060
Int. Cl. H01j 29/70, 25/36; H03h 7/30
U.S. Cl. 315—3 1 Claim



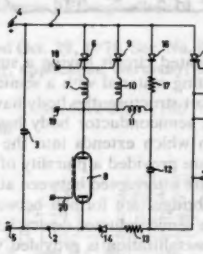
A device for deflecting an electron beam emitted from an electron gun in a cathode-ray tube, the device being of the type having a helical strip slow-wave structure, wherein the improvement resides in enlarging the passage of the electron beam toward the display screen of the cathode-ray tube with the characteristic impedance of the slow-wave structure maintained constant throughout the length of the slow-wave structure.

3,696,267
Patent Not Issued For This Number

3,696,268
ARRANGEMENT INCLUDING AN ELECTRONIC FLASH TUBE

Emil August Exner, Nijmegen, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 3, 1970, Ser. No. 86,522
Claims priority, application Netherlands, Nov. 8, 1969, 6916884
Int. Cl. H05b 37/00
U.S. Cl. 315—151 10 Claims



The invention relates to an arrangement including an electronic flash tube and a controlled semiconductor rectifier for extinguishing this tube.

In order to extinguish the flash tube in a known arrangement, it is shunted by a semiconductor rectifier producing a short circuit across the tube. A drawback thereof is that the supply source of the arrangement a needlessly and heavily loaded thereby.

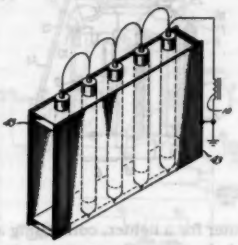
In an arrangement according to the invention an auxiliary capacitor is used which receives a voltage larger than the supply voltage of the arrangement. When the instant of extinguishing has come the voltage of this auxiliary capacitor used to extinguish a further controlled rectifier arranged in series with the tube.

Consequently, the supply source of an arrangement according to the invention is much less heavily loaded and in addition the arrangement is sooner ready for the next flash.

3,696,269
AIR PROCESSOR

Jerome S. Hochheiser, and Louis Zermeno, both of Los Angeles, Calif., assignors to Hochheiser Electronics Corporation, Burbank, Calif.

Filed Nov. 12, 1970, Ser. No. 88,728
Int. Cl. H01j 17/00
U.S. Cl. 317—262 AE 6 Claims

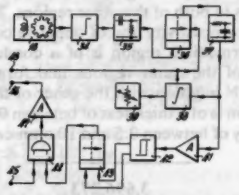


There is described an electrical ion generator for producing large concentrations of ionized molecules in air and utilizing an electrode structure in which one or more electrodes are each positioned inside a sealed dielectric tube filled with an ionizable gas, such as neon. The electrode is connected to one side of a high-frequency, high-voltage source, the other side of the source being connected preferably to another such electrode within a sealed dielectric tube spaced from but parallel to the first tube. Alternatively, one of the electrodes connected to the voltage source may be a conductor in the form of a plate or rod which is at ground potential.

3,696,270
ARRANGEMENT FOR PREVENTING THE SKIDDING OF WHEELS OF A MOTOR VEHICLE

Eberhard Schnaibel; Helmut Fleischer; Richard Zechnall, all of Stuttgart; Helmut Domann, Leonberg; Wolfgang Maisch, Schwieberdingen, and Klaus Christ, Stuttgart, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed July 6, 1970, Ser. No. 52,171
Claims priority, application Germany, July 31, 1969, P 19 38 977.6
Int. Cl. B60t 8/08
U.S. Cl. 317—5 19 Claims



Each wheel has a pulse generator which furnishes a pulse sequence having a repetition rate depending upon wheel speed. The pulses set a monostable multivibrator, whose output, after low pass filtering and differentiating causes the furnishing of an output signal indicative of skidding when the rate of change of the repetition rate exceeds a predetermined rate of change.

3,696,271

MAGNETIC IGNITER

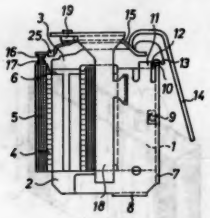
Richard Halm, Silcherstrasse 54, D 7061 Baltmannsweiler, Germany

Filed Sept. 9, 1970, Ser. No. 70,760

Claims priority, application Germany, Sept. 11, 1969, P 19 45 973.5

Int. Cl. F23g 13/04

U.S. Cl. 317—81 5 Claims



A magnetic igniter for a lighter, comprising a magnetic circuit including an induction coil, a permanent magnet, a body of magnetizable material and a movable armature, means for operating the armature, a pair of contacts movable relative to each other on operation of the armature to open and close the magnetic circuit, and spring means for reducing the contact pressure between said pair of contacts.

3,696,272

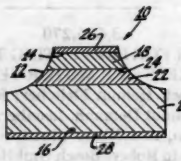
AVALANCHE DIODE

Jacques Mayer Assour, Princeton, N.J., assignor to RCA Corporation

Filed Aug. 21, 1970, Ser. No. 65,948

Int. Cl. H01l 5/00

U.S. Cl. 317—234 5 Claims



An avalanche diode which will oscillate to generate microwave powers in the frequency range of 2 to 16 gigahertz with efficiencies of up to at least 30 percent. The diode will also function as a microwave amplifier in the same frequency range. The diode includes a body of semiconductor material having two spaced apart regions and a third region between and contiguous to both of the other regions. The outer two regions are of low resistivity and of opposite conductivity type. The third intermediate region is of a conductivity type the same as one of the outer regions and forms an abrupt or hyperabrupt PN junction with the other of the outer regions. The third region is of a thickness of between 0.5 and 3 microns and a resistivity of between 0.5 and 10 ohm-cm.

3,696,273

BILATERAL, GATE-CONTROLLED SEMICONDUCTOR DEVICES

Alan Foster, Stockport, England, assignor to U. S. Philips Corporation, New York, N.Y.

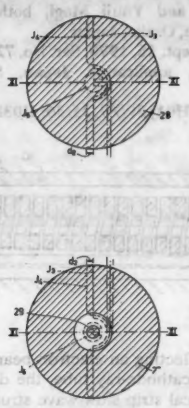
Filed March 31, 1970, Ser. No. 24,233

Claims priority, application Great Britain, Feb. 27, 1970, 9,723/70

Int. Cl. H01l 11/10

U.S. Cl. 317—235 R 7 Claims

A bilateral, gate-controlled thyristor having five layers has end zones, with respect to the main current flow direction, have adjacent peripheries proximate to the gate electrode in an overlapping relationship while having adjacent peripheries



distal to the gate electrode in a spaced relationship. Improved commutation is obtained without any loss of operational modes with this structure.

3,696,274

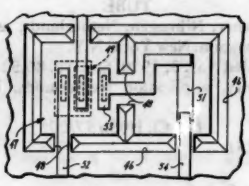
AIR ISOLATED INTEGRATED CIRCUIT AND METHOD

Stanley Paul Davis, Cupertino, Calif., assignor to Signetics Corporation, Sunnyvale, Calif.

Filed June 26, 1970, Ser. No. 50,168

Int. Cl. H01l 19/00

U.S. Cl. 317—235 R 4 Claims



Air isolated integrated circuit having a support structure formed of an insulating material with a semiconductor body carried by the support structure, the body having a generally planar surface. The semiconductor body has moats formed therein in a pattern which extends into the semiconductor body so that there are provided a plurality of semiconductor islands. The moats are interrupted between at least certain of the islands so that bridges are formed between said certain islands. At least one semiconductor device is formed in each of the islands and metallization is provided which interconnects the semiconductor devices to form an integrated circuit. At least a portion of the metallization passes over the bridge between said certain islands.

In the method, moats are formed in a pattern in a semiconductor body to provide a plurality of semiconductor islands with the moats being interrupted between at least certain of the islands so that there is a bridge formed between said certain islands. Semiconductor devices can be formed in the semiconductor body either prior to or after the formation of the moats in the semiconductor body. Metallization is formed on the semiconductor body to interconnect the semiconductor devices with at least a portion of the metallization passing over the bridge between said certain islands.

3,696,275

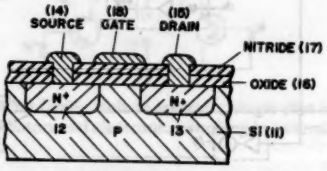
Patent Not Issued For This Number

3,696,276

INSULATED GATE FIELD-EFFECT DEVICE AND METHOD OF FABRICATION

Bernard W. Boland, Scottsdale, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Continuation of Ser. No. 740,967, June 28, 1968, abandoned.
This application June 5, 1970, Ser. No. 41,777
Int. Cl. H01l 11/14
U.S. Cl. 317—235 R 6 Claims



N-CHANNEL ENHANCEMENT

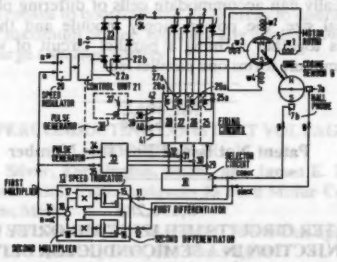
An insulated gate field-effect transistor is fabricated to include an improved insulation layer comprising a film of silicon dioxide covered with a film of silicon nitride. The method of fabrication includes the thermal oxidation of a semiconductor silicon surface in a "reducing" atomsphere. The use of hydrogen as a carrier gas for oxygen provides a thermally grown, pinhole-free oxide film having improved stability under conditions of heat cycling and electrical bias. The process permits a control of oxidation rate by adjusting the oxygen content of the gaseous mixture, rather than by the control of temperature. Best device characteristics are obtained by proceeding immediately with the vapor deposition of silicon nitride on the oxide, as a substantially continuous operation in the same reactor.

3,696,277

START CIRCUIT FOR DC MOTOR HAVING A THYRISTOR COMMUTATOR

Manfred Liska, and Klaus Hubner, both of Munich, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Oct. 29, 1970, Ser. No. 85,119
Claims priority, application Germany, Oct. 31, 1969, P 19 54 846.0
Int. Cl. F02n 11/00
U.S. Cl. 318—138 10 Claims



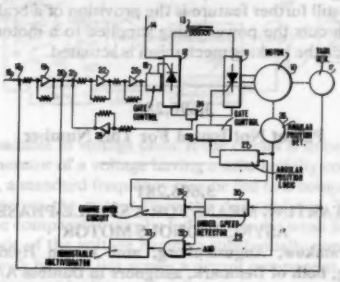
When firing or ignition transformers are utilized in the firing or ignition circuit of an electronic commutator such as, for example, that utilized in the Siemotron drive, there is no ignition or firing pulse at the thyristors during the start of the motor due to the signal provided by the rotor position sensor. In order to insure a reliable start of the motor, additional firing pulses are periodically applied to the firing circuit. Upon the attainment of a specific speed, the additional pulses are automatically discontinued.

3,696,278

CONTROLLING APPARATUS FOR A D.C. BRUSHLESS MOTOR

Masateru Kuniyoshi, Yokohama; Hayatoshi Yamada, Tokyo; Katsumi Fukasawa, and Yoshiaki Tamura, both of Kawasaki, all of Japan, assignors to Tokyo-Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed Nov. 25, 1970, Ser. No. 92,796
Claims priority, application Japan, Nov. 25, 1969, 44/94134
Int. Cl. H02k 29/00
U.S. Cl. 318—138 3 Claims



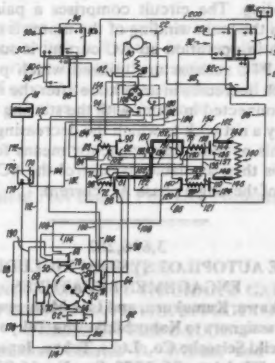
A brushless D.C. motor is supplied an A.C. voltage from a polyphase thyristor bridge inverter which functions as a static commutator. A controllable rectifier is provided for supplying a D.C. voltage to the inverter. There is also provided a starting control circuit which causes the rectifier to act as an inverter during every commutation of the thyristor bridge inverter, rapidly turning off the thyristors in the inverter. The starting control device also functions to cause the commutator lead angle of the thyristor bridge inverter to remain substantially zero while the rotational speed of the motor is less than a predetermined value. Thus, it is possible to excite the armature winding of the motor with the maximum rated voltage to derive the maximum torque therefrom.

3,696,279

ELECTRICAL CONTROL APPARATUS

Louis Gyori, Chomedey, Quebec, Canada, assignor to Marathon Golf Cars Ltd., Montreal, Quebec, Canada

Filed July 16, 1970, Ser. No. 55,410
Int. Cl. H02p 7/20
U.S. Cl. 318—139 22 Claims



A control apparatus for vehicles and devices powered by stored electrical power such as golf cars, snow-blowers and small tractors. The control apparatus includes a cam operated device operating in conjunction with the stored electrical power, said cam device including cam operated means movable between initial and terminal power regulating positions. In a first or initial regulating position, the cam device is adapted

to connect first and second sources of electrical power in parallel, in a second power regulating position the cam is adapted to connect the same sources in parallel with a resistor cut into the circuit, in a third power regulating position, the cam is adapted to connect the sources in series and in a fourth position, it is adapted to connect the sources in series with a resistor cut into the circuit. A further feature includes the provision of a reverse mechanism providing first and second reverse speeds for a vehicle or device by connecting the sources in parallel with a resistor cut into the circuit to provide a first reverse speed, a second reverse speed being provided by connecting the sources in parallel without the resistor in the circuit. A still further feature is the provision of a braking feature which cuts the power being supplied to a motor for the system once the braking mechanism is actuated.

3,696,280

Patent Not Issued For This Number

3,696,281

STARTING MEANS FOR A SINGLE-PHASE ASYNCHRONOUS MOTOR

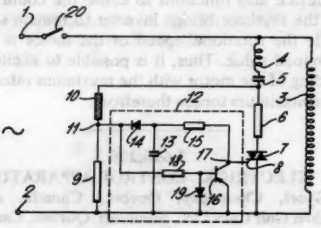
Asger Gramkow, Augustenborg, and Jorgen Hyldal, Sonderborg, both of Denmark, assignors to Danfoss A/S, Nordborg, Denmark

Filed June 2, 1971, Ser. No. 149,186

Claims priority, application Germany, June 10, 1970, P 20 28 455.3

Int. Cl. H02p *1/44*

U.S. Cl. 318—221 E **3 Claims**



The invention relates to a starting circuit for a single phase asynchronous electric motor having a main winding and a starting winding. The circuit comprises a pair of terminals across which the main winding of the motor is connected and across which in operation an AC current is supplied. Means including a PTC resistor are utilized which provide an AC voltage which decreases in amplitude after the motor start-up. An SCR is connected in series with the starting winding and is controlled by a network to which the decreasing AC voltage is supplied. This network has capacitor means for storing current which is then available to control the SCR during zero cross-overs of the single phase AC current.

3,696,282

MARINE AUTOPILOT SYSTEM INCLUDING MODE ENGAGEMENT FEATURES

Yoichi Hirokawa, Kamakura, and Isao Masuzawa, Tokyo, both of Japan, assignors to Kabushikikaisha Tokyo Keiki Seizosho (Tokyo Keiki Seizosho Co., Ltd.), Tokyo, Japan

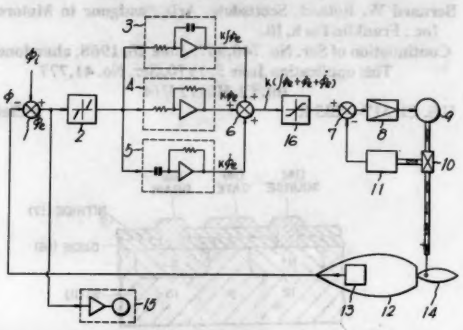
Filed Aug. 26, 1970, Ser. No. 66,939

Claims priority, application Japan, Aug. 30, 1969, 44/68794

Int. Cl. G05d *1/00*; B63h *25/02*

U.S. Cl. 318—588 **4 Claims**

A marine autopilot system for ships in which the set course signal and the heading signal are supplied to a comparator which feeds a servomotor through an operational device to control the ship. In the present invention when the marine autopilot is automatically changing course, switching means change various constants and functions of the marine autopilot system and disconnect other elements which are unnecessary during course change.



3,696,283

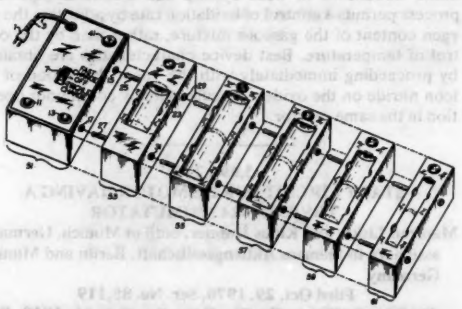
MODULAR BATTERY CHARGER

John W. Ackley, III, 310 E. 71st St., New York, N.Y.

Filed April 15, 1970, Ser. No. 28,702

Int. Cl. H01m *45/04*

U.S. Cl. 320—2 **10 Claims**



Battery charger assembly comprising a power supply module and, detachably mated thereto and to each other, a series of charging modules capable of accommodating a varying number of cells to be charged wherein each charging module individually can accommodate cells of differing physical and electrical size, the power supply module and the charging modules together forming a parallel circuit of which each charge module forms one parallel leg.

3,696,284

Patent Not Issued For This Number

3,696,285

INVERTER CIRCUITS UTILIZING MINORITY CARRIER INJECTION IN A SEMICONDUCTOR DEIVCE

Jerry Sala, Kingston, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

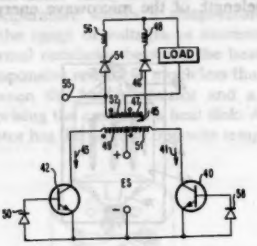
Division of Ser. No. 586,775, Oct. 14, 1960. This application April 14, 1970, Ser. No. 32,503

Int. Cl. H02m *7/48*

U.S. Cl. 321—45 R **11 Claims**

A family of circuits characterized by storage mode operation in a switching circuit employs minority carrier injection from the base into the collector region of a semi-conductor device. The minority carrier charge stored in the collector

thereafter causes amplified forward collector emitter current when forward collector potential is applied. Particular exam-



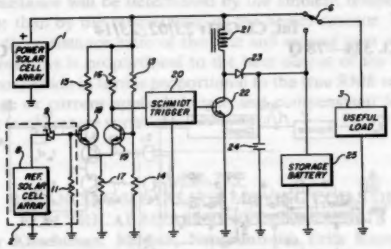
ples of the circuit family include inverters, single shot circuits, transistor oscillators and electronic switching in general.

3,696,286

SYSTEM FOR DETECTING AND UTILIZING THE MAXIMUM AVAILABLE POWER FROM SOLAR CELLS

Louis A. Ule, Rolling Hills, Calif., assignor to North American Rockwell Corporation

Filed Aug. 6, 1970, Ser. No. 61,570
Int. Cl. G05f *1/62*; H02j *7/34*
U.S. Cl. 323—15 **4 Claims**



In a power solar cell array consisting of many solar cells connected to deliver useful electrical power, there is imbedded a smaller reference solar array consisting of solar cells connected in series with a Zener diode and load resistor so devised that the voltage that appears across the load resistor is equal to or a constant fraction of the voltage at which the power array, operating at the same temperature and solar exposure as the reference array, delivers maximum electrical power. The voltage difference between the large solar array or the given fraction thereof and the reference solar array is used directly as means to constrain the large array to operate at the voltage of maximum power, typically any excess power being used to charge a storage battery.

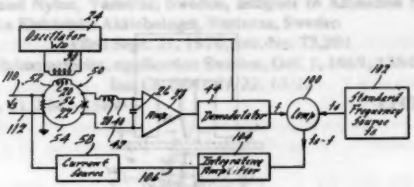
3,696,287

SUPERCONDUCTING CONSTANT VOLTAGE GENERATOR

Arnold H. Silver, Farmington, Mich., and James E. Zimmerman, Santa Ana, Calif., assignors to Ford Motor Company, Dearborn, Mich.

Division of Ser. No. 809,320, March 21, 1969. This application June 1, 1970, Ser. No. 54,076
Int. Cl. G05f *1/12*
U.S. Cl. 323—7 **6 Claims**

A superconducting circuit that may be utilized as an ultra-high sensitivity voltmeter or a generator generating a voltage having a substantially constant amplitude. A superconductive material having a weak link positioned therein with a voltage of unknown magnitude applied across the weak link. An oscillator has its output coupled to the weak link so that the output signal of the oscillator generates an oscillating current through it. The voltage of unknown magnitude causes an oscillating current to be generated through the weak link with a frequency proportional to the unknown magnitude of the voltage. The weak link mixes the frequency of the two currents and a demodulator detects the frequency of the oscillating current produced by the voltage of unknown magnitude. When the circuit is to be employed as a voltmeter, a frequency meter may be connected to the demodulating means which has a



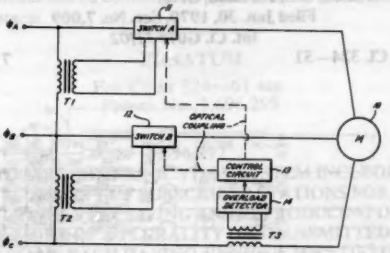
scale readable in voltage units. If the circuit is to be employed as a generator of a voltage having a substantially constant amplitude, a standard frequency may be fed to a comparator that also receives the output from the demodulator. The output from the comparator may be fed back to the weak link and the amplitude of the voltage having a substantially constant magnitude may be read out across a circuit component connected to the superconducting material.

3,696,288

OPTICALLY COUPLED CONTROL CIRCUIT

Richard Jan Carman, Houston, Tex., assignor to Cameron Iron Works, Inc., Houston, Tex.

Filed May 8, 1970, Ser. No. 35,670
Int. Cl. G05f *1/44*; H02p *13/16*
U.S. Cl. 323—21 **18 Claims**



In a multi-phase power supply, a separate light-actuated semi-conductor switch is located in every line but one. An overload sensor is coupled to the remaining line, and upon the occurrence of an overload, emits a light signal that opens the light-sensitive switches in the other lines.

3,696,289

Patent Not Issued For This Number

3,696,290

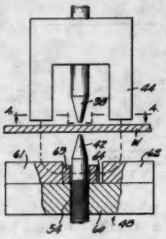
MAGNETIC NON-CONTACT THICKNESS GAUGE WITH MEANS TO COMPENSATE THE EFFECTS OF STRAY FIELDS ON THE GAUGE

Hubert Dreckmann; Charles B. Wilson, and Richard K. Wagenblast, all of St. Petersburgh, Fla., assignors to The Hays Corporation, Michigan City, Ind.

Filed July 22, 1970, Ser. No. 57,087
Int. Cl. G01r *33/12*
U.S. Cl. 324—34 TK **10 Claims**

A thickness measuring device wherein means are positioned at opposite sides of and in selected spacing relative to a work piece being measured and respectively include magnet

responsive means supported by one positioning means and a magnet supported by the other positioning means, said magnet and magnet responsive means defining a flux circuit intercepted by said work piece. The magnet responsive means include spaced parts and a third relatively small part between said spaced parts at which flux in said circuit is concentrated. A flux sensitive resistor is positioned to respond to flux variations at said third part and is connected in a Wheatstone



bridge measuring circuit which indicates variations in the thickness of the work piece.

Temperature control means including a heater and sensor means compensate for temperature variations acting on the magnetic parts, said sensor means being connected in another Wheatstone bridge measuring circuit. The sensor means may include cooperating sensors located respectively adjacent to the work piece and adjacent to the heater.

3,696,291

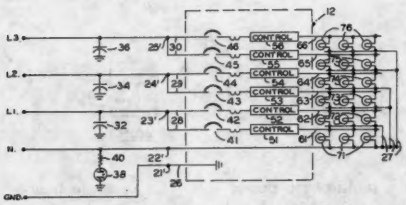
EQUIPMENT FOR DETECTING IMPROPER WIRING IN PORTABLE INSTALLATION

Arthur P. Horne, Portland, Oreg., assignor to Electronics Diversified, Inc., Portland, Oreg.

Filed Jan. 30, 1970, Ser. No. 7,009

Int. Cl. G01r *31/02*

U.S. Cl. 324—51 **7 Claims**



A power wiring error indicator for electrical equipment includes an indicator means coupled between equipment ground and the neutral terminal of a three-phase, four-wire system, or a single phase, three-wire system. Capacitors are connected between each line terminal and equipment ground to provide a return circuit for the indicator means.

3,696,292

MICROWAVE MOISTURE SENSING SYSTEM INCLUDING MEANS TO CONTINUOUSLY CHANGE THE TRANSMISSION PATH OF THE MICROWAVE ENERGY

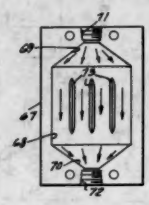
Leroy H. Busker, Rockton, Ill., and Robert J. Mosher, Beloit, Wis., assignors to Beloit Corporation, Beloit, Wis.

Division of Ser. No. 679,325, Oct. 31, 1967. This application Aug. 3, 1970, Ser. No. 67,642

Int. Cl. G01r *27/04*

U.S. Cl. 324—58.5 A **2 Claims**

An apparatus for measuring the amount of moisture in a sample which is generally formed of a microwave energy source, a microwave radiating element connected to the source, a microwave energy receiving element, and a microwave energy indication connected to the receiving element. The sample is positioned between the radiating and receiving elements and a structure is provided for changing the energy transmission path through the sample by at least one-half wavelength of the microwave energy. Such means



may take the form of a frequency modulator connected to the source, a dielectric disc in the transmission path, or a structure for continuously changing the distance between the radiating element and the sample or combination of these means.

3,696,293

PULSE-FREQUENCY TESTER

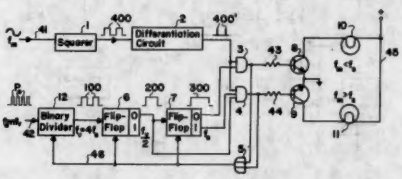
Gunther Hoffmann, and Bernd Zabel, both of Eningen, Germany, assignors to Wandel u. Goltermann, Reutlingen, Germany

Filed Sept. 21, 1970, Ser. No. 73,766

Claims priority, application Germany, Oct. 8, 1969, P 19 50 684.4

Int. Cl. G01r *23/02, 23/14*

U.S. Cl. 324—78 Q **9 Claims**



A train of pulses of unknown repetition frequency, ranging between 2/3 and two times a predetermined cadence, is fed together with the output of the last two stages of a multistage binary counter to a coincidence circuit, the output frequency of the counter equaling the mean cadence of the unknown pulse train. Deviations of the pulse frequency from that cadence beyond predetermined upper and lower tolerance limits, as determined by the coincidence circuit, reset the counter to zero while operating one of two signal lamps to indicate the sign of such deviation. An associated timer may maintain the error-indicating signal lamp operated for a predetermined period and may also cause an automatic resetting of the counter to zero at the end of such period, subject to a restarting of the count by the next pulse of the unknown train.

3,696,294

RMS VOLTAGE OR CURRENT SENSOR

Ronnie W. Krupka, Richardson, Tex., assignor to ECC Corporation, Euless, Tex.

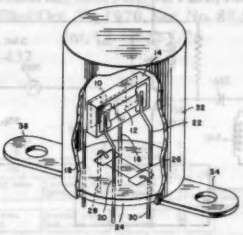
Filed Jan. 26, 1970, Ser. No. 5,671

Int. Cl. G01r *5/26, 5/22*

U.S. Cl. 324—105 **18 Claims**

A voltage or current sensor containing a heater resistor, a first heat responsive resistor in intimate thermal contact with the heater resistor, a second heat responsive resistor in intimate thermal contact with the ambient temperature, and insulator means separating the heater resistor and first heat responsive resistor from the second heat responsive resistor. A voltage or current to be measured is applied to the heater resistor, which produces a heat output that is proportional to the

true RMS value of current flow through the heater resistor. This heat output is transmitted to the first heat responsive resistor, whose resistance value varies as a substantially linear function of temperature within a temperature range corresponding to the range of voltages or currents to be measured. The thermal resistance between the heat resistor and the first heat responsive resistor is much less than the thermal assistance between the heater resistor and a temperature reference comprising the case and a heat sink. A second heat responsive resistor has the same or opposite temperature coefficient of resistance of the first heat responsive resistor, and its resistance also varies as a substantially linear function of temperature, but since it is insulated from the heator resistor and is in intimate thermal contact with the temperature reference, its resistance will be determined by the ambient temperature rather than by the temperature of the heater resistor. Therefore, the resistance ratio of the first and second heat responsive resistors is proportional to the heat output of the heater resistor, which in turn is proportional to the true RMS value of voltage or current applied thereto and compensated for ambient temperature variations.



3,696,295

BALANCING MEANS FOR MOVING COILS OF ELECTRICAL MEASURING INSTRUMENTS

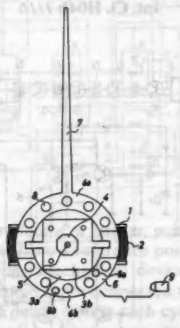
Willy Kisselmann, Munich, Neugrunwald; Fritz Rumpelein, Munich, and Paul Kopf, Unterhaching, all of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Sept. 11, 1970, Ser. No. 71,510

Claims priority, application Germany, Sept. 16, 1969, P 19 46 818.9

Int. Cl. G01r *1/00*

U.S. Cl. 324—154 PB **12 Claims**



A fully assembled moving coil assembly for use in D'Arsonval and like electrical measuring instruments includes a disk-shaped plastic balancing element which is integral with the pointer and with a portion of one of the bearing members and is formed with one or more annuli of equidistant bores for reception of pin-shaped counterweights. The center of each annulus is located on the pivot axis of the moving coil assembly. One or more counterweights are inserted into and snugly received in selected bores after the assembly is tested in a suitable apparatus which determines the location of the unbalance.

3,696,296

MECHANISM FOR TESTING ELECTRICAL EQUIPMENT

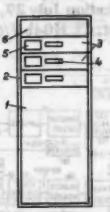
Roland Nylen, Vasteras, Sweden, assignor to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed Sept. 21, 1970, Ser. No. 73,801

Claims priority, application Sweden, Oct. 1, 1969, 13541/69

Int. Cl. G01r *31/22, 15/12*

U.S. Cl. 324—158 P **13 Claims**



For testing electrical equipment, a test rig is provided with a number of contact boxes mounted in a frame. Each box contains a normally closed pair of contacts which are connected to apparatus to be tested. A test handle is provided with a number of pins adapted to be connected to testing equipment. The test pins can be inserted through openings in the front of the boxes to enter between the contacts, thus separating them and making a connection to the testing mechanism. An arrangement may also be provided by which the contacts of adjacent boxes can be connected to each other by the opening of the contacts.

ERRATUM

For Class 324—61 see:
Patent No. 3,696,299

3,696,297

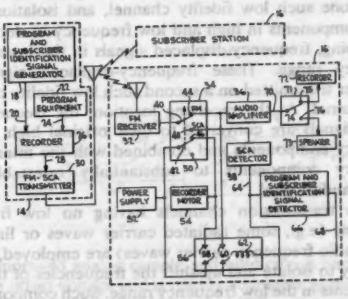
BROADCAST COMMUNICATION SYSTEM INCLUDING A PLURALITY OF SUBSCRIBER STATIONS FOR SELECTIVELY RECEIVING AND REPRODUCING ONE OR MORE OF A PLURALITY OF TRANSMITTED PROGRAMS EACH HAVING A UNIQUE IDENTIFYING CONE ASSOCIATED THEREWITH

Richard J. Otero, 12209 Westmont Lane, Bowie, Md.

Filed Sept. 1, 1970, Ser. No. 68,714

Int. Cl. H04b *1/00*

U.S. Cl. 325—55 **13 Claims**



A selective broadcast communication system including a transmitting station for broadcasting programs, each program being preceded by program and subscriber identifying codes and followed by a stop code, and a plurality of subscriber sta-

tions receiving the transmitted programs and codes, each of the subscriber stations being selectively operable to reproduce only those programs which were preselected by detecting the program and subscriber identifying codes and determining the coincidence thereof with the preselected program and with a subscriber module such that preselected programs may be recorded by authorized subscribers automatically.

3,696,298

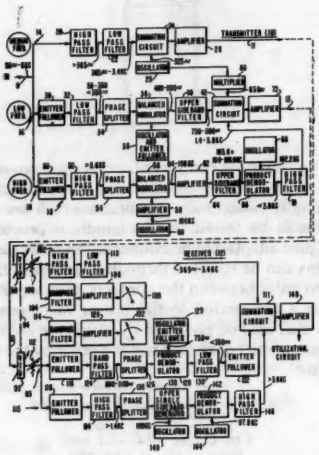
AUDIO SIGNAL TRANSMISSION SYSTEM AND METHOD

Leonard R. Kahn, Freeport, and Robert R. Gordon, Westbury, both of N.Y., assignors to Kahn Research Laboratories, Inc., Freeport, N.Y.

Continuation-in-part of Ser. No. 652,529, July 11, 1967, abandoned. This application July 27, 1970, Ser. No. 58,227

Int. Cl. H04b *1/66*

U.S. Cl. 325—59 **17 Claims**



A system and method for processing relatively high fidelity audio signals (having components in the high, intermediate and low frequency ranges, such as speech and music signals having frequencies between about 50 c.p.s. and 6,000 c.p.s., for example) for transmission across relatively low fidelity transmission channels e.g., telephone lines or radio frequency carrier waves which are restricted to low fidelity signal modulation) adapted to effectively transmit only electrical signal components in an intermediate frequency range e.g., from about 300 c.p.s. to about 4,000 c.p.s., for example). Typical practice of the invention involves isolation of the signal components in the intermediate frequency range for transmission on one one such low fidelity channel, and isolation of the signal components in high and low frequency to derive non-overlapping, frequency-displaced signals in the intermediate frequency range. These frequency-displaced signals are thereafter transmitted on a second such low fidelity transmission channel. At the receiving location, the frequency-displaced signals are converted to their original high and low frequency components and combined with the intermediate frequency components to substantially re-establish the original audio signal.

Where transmission channels having no low frequency limitations (e.g., some radiated carrier waves or line transmitted radio frequency carrier waves) are employed, it is not necessary to isolate and up-shift the frequencies of the signal components in the low frequency range. Such components are transmitted with the signal components in the intermediate frequency range across a single channel; and the signal components in the high frequency range are isolated, down-shifted in frequency into the intermediate frequency range and transmitted across a second channel.

3,696,299

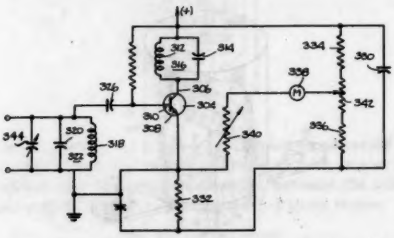
RELATIVE CARBON CONTENT METER FOR SMOKE FILTERS

James O. Pullman, Chapel Hill, N.C., and William R. Weidlich, St. Joseph, Mich., assignors to Liggett & Myers Incorporated, New York, N.Y.

Filed Feb. 4, 1970, Ser. No. 8,603

Int. Cl. G01r *27/26*

U.S. Cl. 324—61 R **27 Claims**



An apparatus to measure the relative quantity of carbon present in a smoke filter comprising a parallel plate capacitor between whose parallel plates are disposed rods of filter material. The parallel plate capacitor is attached to a capacitance measuring device which is calibrated to measure a capacitive change of the system comprising said parallel plates and said rods and to indicate when the carbon content of said rods deviates from a predetermined standard. An embodiment of the invention is disclosed which comprises an improved device for measuring the capacitance of said capacitive system by utilizing a linear approximation in the dependency of collector current with small variations in capacitance added to the base circuit in a tuned collector, tuned base transistor oscillator wherein said dependency is measured in a "Wheatstone" bridge circuit.

3,696,300

Patent Not Issued For This Number

3,696,301

TUNING INDICATING APPARATUS FOR FM RECEIVER

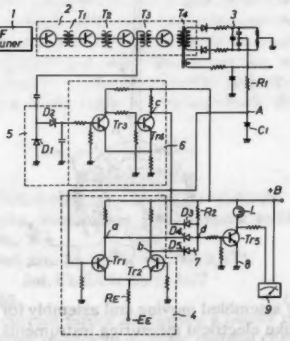
Juro Hoshi, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Japan

Filed Oct. 5, 1970, Ser. No. 77,890

Claims priority, application Japan, Oct. 8, 1969, 44/95493

Int. Cl. H04b *1/16*

U.S. Cl. 325—398 **3 Claims**



In an FM receiver, a tuning indicating apparatus comprises a differential amplifier for receiving an FM detector output and delivering an output under a frequency-to-output response curve of a W-shape which is obtained by inverting

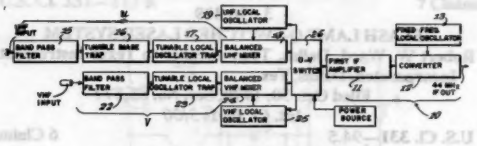
one half of an S-shaped response curve of the FM detector; an AM detector connected to an IF amplifier; an AND circuit responsive to the outputs from the differential amplifier and the AM detector; and a tuning indicator energized by an output from the AND circuit.

3,696,302

UHF-VHF VARACTOR TUNER AMPLIFYING BAND CONVERSION

Thomas F. Gossard, Studio City, Calif., assignor to Standard Kollsman Industries, Inc., Melrose Park, Ill.

Filed Oct. 30, 1970, Ser. No. 85,583
Int. Cl. H04b 1/26
U.S. Cl. 325—432 **8 Claims**



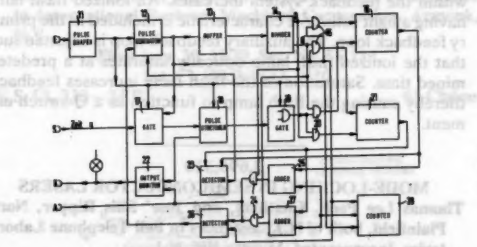
An all channel television tuner comprises separate UHF and VHF sections each utilizing voltage controlled diode capacitance tuning and being operable to select a corresponding input signal and band converting the same in inverted relation to an intermediate frequency of about 230 MHz and a second mixer section for converting from 230 MHz to the standard IF television signal.

3,696,303

PROCESS AND APPARATUS FOR PRODUCING TRIGGER PULSES

Gunter Hartig, Elbinger Strasse 7, 7500 Karlsruhe, Germany

Filed April 2, 1970, Ser. No. 25,002
Claims priority, application Germany, April 3, 1969, P 19 17 389.8
Int. Cl. H03k 3/00
U.S. Cl. 328—55 **14 Claims**



Apparatus for producing a trigger pulse at a preselected point which is off-set from a reference point in the movement of a cyclically moving mechanical device which includes a pulse generator adapted to be connected to the device which produces a series of pulses during each cycle of the device. A counter counts the pulses. A gate connects the pulse generator with the counter and control means enables the gate for a time period corresponding to the interval of time between movement of the mechanical device between the preselected and reference points. Trigger means is provided which increments the count in the counter to produce a trigger pulse after a desired count has been reached.

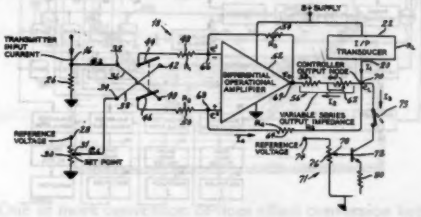
A novel method of producing the trigger is also disclosed.

3,696,304

PROPORTIONAL ONLY PROCESS CONTROLLER

Louis H. Fricke, Jr., St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed June 29, 1970, Ser. No. 50,489
Int. Cl. H03f 3/68
U.S. Cl. 330—30 D **4 Claims**



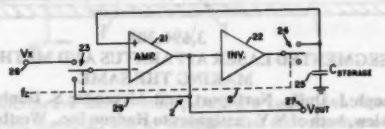
Automatic process controller circuitry for producing an output current which is proportional to a process variable input signal. A differential operational amplifier is connected to receive set point and process variable input signals and provides an output voltage which is proportional to the difference between these two signals. An adjustable proportional band series output impedance is connected between the output of the operational amplifier and a controller circuit output node, and this series impedance converts the output voltage of said amplifier to a current. The voltage developed across this variable series output impedance is differentially fed back via positive and negative feedback loops to the inverting and noninverting inputs of the operational amplifier, and such feedback connection enables the proportional current flowing through the variable series output impedance to be made constant and independent of the output voltage of the operational amplifier. Also, since the load current flowing in the transducer driven by the above controller circuitry can be made equal or proportional to this proportional current, said load current can be adjusted to a value wholly independent of the internal resistance of the driven transducer.

3,696,305

HIGH SPEED HIGH ACCURACY SAMPLE AND HOLD CIRCUIT

Roy O. Mitchell, Starrucca, Pa., and Hermann Schmid, Binghamton, N.Y., assignors to General Electric Company

Filed July 1, 1970, Ser. No. 51,552
Int. Cl. H03f 1/14
U.S. Cl. 330—51 **2 Claims**



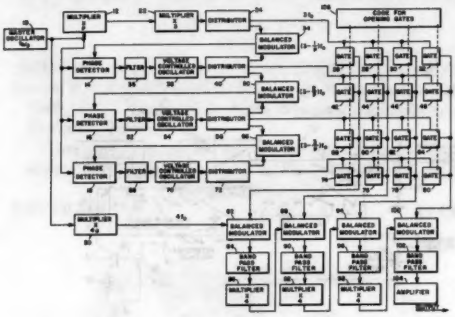
This improved analog sample and hold circuit corrects for amplifier offset voltage and is readily adaptable to monolithic mechanization using complementary MOS techniques. Offset correction is accomplished by using a high gain differential input amplifier twice but through opposite input terminals. The amplifier offset voltage thus also occurs twice, but with opposite polarity hence eliminating itself.

3,696,306

COHERENT JUMP FREQUENCY SYNTHESIZER

Arthur J. Kline, Jr., Scottsdale, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Filed June 5, 1970, Ser. No. 43,752
Int. Cl. H03b 3/06
U.S. Cl. 331—2 **4 Claims**



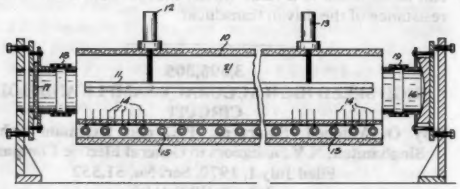
Means are provided to produce an output wave whose frequency may jump from one value to a very different frequency at a high jump rate, the phase of the produced jump frequency wave being unambiguous and predictable.

3,696,307

CAPACITOR LASER

Alexander J. Beaulieu, Ste. Foy, Quebec, and Derwyn C. Johnson, Ottawa, Ontario, both of Canada, assignors to Her Majesty the Queen in right of Canada as represented by the Minister of National Defence of Her Majesty's Canadian Government

Filed Aug. 20, 1970, Ser. No. 65,477
Claims priority, application Canada, Aug. 29, 1969, 060,719
Int. Cl. H01s 3/09
U.S. Cl. 331—94.5 **1 Claim**



A transverse excitation system for molecular gas laser is disclosed which includes a capacitor in series with a plurality of electrodes forming one side of the transverse excitation system which electrodes discharge to opposing electrodes.

3,696,308

SEGMENTED LASER APPARATUS AND METHOD OF MAKING THE SAME

Joseph J. Duffy, Northport, and Alexander S. Dunbar, Plainview, both of N.Y., assignors to Hadron Inc., Westbury, N.Y.

Filed Aug. 21, 1970, Ser. No. 65,794
Int. Cl. H01s 3/06
U.S. Cl. 331—94.5 **16 Claims**

The apparatus comprises an outer jacket having a through bore which receives a plurality of laser discs therein. Spacing pins are provided between adjacent discs for spacing adjacent discs apart. Opposite edges of alternate discs are spaced from the wall of the bore to define fluid passages therebetween. Retaining means are sealingly received in each end of the jacket for retaining the laser discs within the jacket and for providing for the flow of energy and a fluid in and out of said jacket.

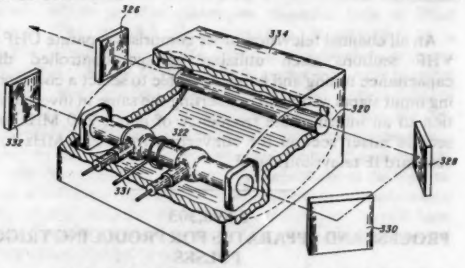
The method includes forming a laser rod to a preselected diameter, removing a portion of the rod to provide a relieved surface and cutting the rod into a plurality of laser discs. The discs are placed into a jacket to provide the laser apparatus.

3,696,309

FLASH LAMP Q-SWITCHED LASER SYSTEM

Robert W. Ward, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Oct. 30, 1970, Ser. No. 85,577
Int. Cl. H01s 3/00
U.S. Cl. 331—94.5 **6 Claims**



A Q-switch for a solid-state laser system is provided by a gas-filled flash lamp within the optical feedback path of the laser system. One embodiment utilizes the opaque region of an ionized flash lamp to interrupt the optical feedback path during the early portion of the laser rod pumping cycle. Feedback is restored by deionizing the flash lamp.

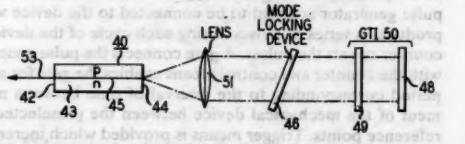
A second embodiment utilizes an auxiliary feedback loop to control the rate at which the intensity of the laser radiation within the feedback system increases. An ionized flash lamp having a light saturable characteristic is included in the primary feedback loop. The auxiliary feedback loop is adjusted such that the ionized flash lamp optically saturates at a predetermined time. Saturation of the flash lamp increases feedback, thereby causing the flash lamp to function as a Q-switch element.

3,696,310

MODE-LOCKING IN SEMICONDUCTOR LASERS

Thomas Lee Paoli, Chatham, and Jose' Ellis Ripper, North Plainfield, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 1, 1970, Ser. No. 77,136
Int. Cl. H01s 3/00; G01b 9/00
U.S. Cl. 331—94.5 **22 Claims**



In order to achieve longitudinal mode-locking in a semiconductor laser, the normal dispersion of a semiconductor medi-

um is compensated for by means of an intracavity dispersive structure, thereby causing the longitudinal mode separation frequency to be uniform. The dispersive structure may take several forms including a Gires-Tournois interferometer, a pair of spaced, parallel diffraction gratings or an acoustic diffraction grating.

3,696,311

LONG-CYCLE TRANSISTOR ASTABLE MULTIVIBRATOR

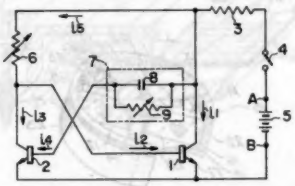
Takayoshi Oushige, and Kikuo Iizuka, both of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed March 10, 1970, Ser. No. 18,169

Claims priority, application Japan, March 10, 1969, 44/17517

Int. Cl. H03k 3/282

U.S. Cl. 331—113 R **7 Claims**



A long cycle oscillator comprising a first and a second transistor, and a charge-discharge circuit including a capacitor and a resistor which are connected in parallel to each other, in which the said components are so constructed that a base current of the first transistor is controlled by a collector voltage of the second transistor, an applied voltage to the second transistor is controlled by the collector voltage of the first transistor, the base current of the second transistor being controlled by the collector voltage of the first transistor and the charge-discharge circuit.

3,696,312

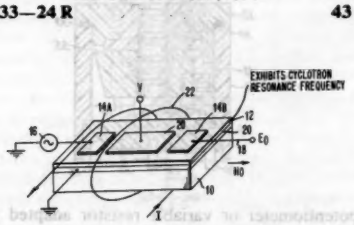
CYCLOTRON RESONANCE DEVICES CONTROLLABLE BY ELECTRIC FIELDS

Lawrence Kuhn; Varadachari Sadagopan, both of Ossining, and Robert T. Tsui, Yorktown Heights, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 30, 1970, Ser. No. 51,111

Int. Cl. H03h 9/22, 9/30

U.S. Cl. 333—24 R **43 Claims**



Electric field controllable devices which operate on the principle of velocity change of a wave passing therethrough. These waves can be magneto-elastic or spin waves, including surface waves. The materials used in these devices include $Ga_{3-x}Fe_xO_3$, Cr_2O_3, and YIG. When the electric field across the device is changed, the cyclotron resonance frequency of the device is greatly shifted, resulting in wave velocity changes up to about 50 percent. A bias magnetic field is generally applied across the devices to establish a resonance frequency. Devices include variable delays, modulators, frequency translators, wave guides, tunable filters, etc.

3,696,313

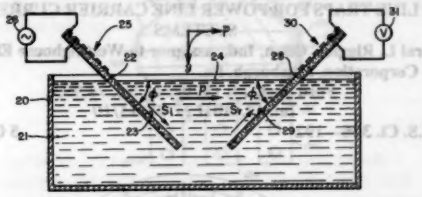
ARRANGEMENT FOR CONVERTING BETWEEN ACOUSTIC COMPRESSIONAL WAVES AND SURFACE WAVES

Robert Adler, Northfield, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Filed July 29, 1970, Ser. No. 59,216

Int. Cl. H03h 9/00; H04r 17/00; H03h 7/36

U.S. Cl. 333—30 R **5 Claims**



One or more conversion devices effect conversion between compressional waves and surface waves. In one form, surface waves created by an applied input signal are converted to compressional waves having an exponential amplitude taper across their path and those compressional waves, in turn, develop surface waves from which an output signal is derived. In another form wherein compressional waves create surface waves at a common boundary, the compressional waves exhibit an at least approximate exponential amplitude taper across their path. In yet another form, compressional waves create surface waves at a common boundary the length of which is such that, in traveling along the boundary in the reverse direction, the surface waves would be attenuated by a value of $1/e$. These conversion devices are reversible and typically the surface-wave medium is a solid while the compressional-wave medium is a liquid, semi-liquid or plastic.

3,696,314

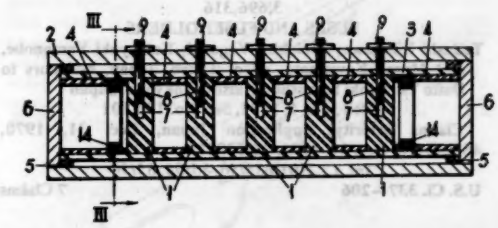
MICROWAVE DEVICES

Robert Christopher Kell, South Harrow, England; David Forbes Rendle, Waterloo, Ontario, Canada, and Eric Edward Riches, St. Albans, England, assignors to The General Electric Company Limited, (formerly The General Electric and English Electric Companies Limited), London, England

Filed Aug. 17, 1970, Ser. No. 64,301

Int. Cl. H03h 7/10, 13/00; C04b 35/48

U.S. Cl. 333—73 W **3 Claims**



In a microwave device incorporating a component formed of dielectric material, and so designed that the response of the device is dependent on the permittivity of the said material, the component is formed of a ceramic material consisting essentially of one or more alkaline earth metal zirconates, or zirconates and titanates, the composition of the material being such that the atomic ratio of zirconium to titanium is not less than 80 : 20, that it does not contain more than 10 mole percent of barium titanate, and that the material will have, at frequencies in the range of 400 MHz to 30 GHz, permittivities in the range of 25 to 75, a substantially constant temperature coefficient of permittivity, which is preferably within the

range from +50 to −100 p.p.m. per degree Centigrade, and a loss tangent not exceeding 0.005 at 20° C. The dielectric materials are suitable for use, for example, as resonators for microwave bandpass filters, and as substrates for microwave integrated circuits, and are advantageous for these applications in having substantially constant temperature coefficients of permittivity, of controllable values, as well as low dielectric losses, at microwave frequencies.

3,696,315

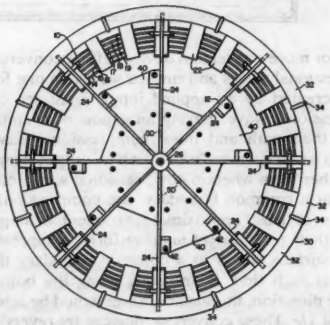
LINE TRAPS FOR POWER LINE CARRIER CURRENT SYSTEMS

Oral L. Riggins, Odon, Ind., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sept. 24, 1970, Ser. No. 74,993

Int. Cl. H01f *27/08, 15/10*

U.S. Cl. 336—192 **5 Claims**



A line trap is provided in an arrangement facilitating current balance between a plurality of layers as well as providing mechanical stability. The line trap includes a coil of an electrical conductor with an end frame at each end that comprises a plurality of bars extending radially outward from a central hub. The radial bars are mechanically attached to the coil structure and also provide a path for electrical conduction from the layers of the coil to centrally located connector taps. The radial bars also permit terminating coil layers at desired fractions of a turn to achieve current balance. Preferably the layers of the coil have turns uniformly spaced from the axis with uniform spacing between adjacent turns of all the layers.

3,696,316

FUSES AND FUSEHOLDERS

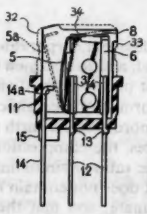
Tadashi Kitagawa; Shoichiro Yaguchi; Katsuyuki Yamanobe, and Masao Kawamata, all of Tokyo, Japan, assignors to Daito Tsushinki Kabushiki Kaisha, Tokyo-to, Japan

Filed June 4, 1971, Ser. No. 150,101

Claims priority, application Japan, Dec. 31, 1970, 45/138478; Dec. 31, 1970, 45/138479

Int. Cl. H01h *85/56, 85/08, 85/30*

U.S. Cl. 337—206 **7 Claims**



A fuse device comprising a fuse and a fuseholder, in which a fuse element of the fuse comprises a fuse wire and good-conductive layer coated on the fuse wire except a melting center portion thereof. The fuse is provided with a spring indicator and a spring strip which are seated in parallel with each other. The fuse element is connected to respective tops of the spring indicator and the spring strip while the spring indicator is pulled to the spring strip. The fuseholder is provided with a hollow which receives the lower part of the fuse, and two fork terminals seated in the hollow to be coupled with the spring indicator and the spring strip. The fuseholder may be provided at least one alarm terminal in addition to the two fork terminals.

3,696,317

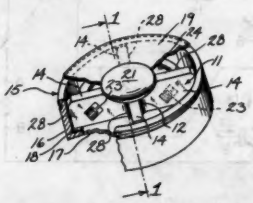
LOW CAPACITY, LOW PROFILE LOAD CELL

Emory W. Farr, Santa Fe Springs, Calif., assignor to Waukesha Bearings Corporation, Waukesha, Wis.

Filed Aug. 19, 1970, Ser. No. 65,155

Int. Cl. G01l *1/22*

U.S. Cl. 338—5 **5 Claims**



A sensing element, which includes a central core having four radially projecting webs with a bonded foil strain gauge on each web, is enclosed in a cylindrical case having an integral bottom with an annular ledge supporting the outer portions of the webs of the sensing element. The case is closed by a top diaphragm which centers a load-receiving button over the core of the sensing element.

3,696,318

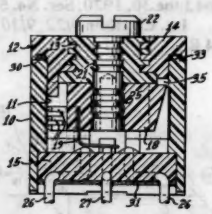
TRIMMER POTENTIOMETERS

Walter Mack, Elmhurst, N.Y., assignor to Litton Precision Products, Inc., Mt. Vernon, N.Y.

Division of Ser. No. 774,682, Nov. 12, 1968, Pat. No. 3,597,837. This application July 28, 1970, Ser. No. 64,874

Int. Cl. H01c *9/02*

U.S. Cl. 338—162 **4 Claims**



A potentiometer or variable resistor adapted to be fabbricated in subminiature size. The potentiometer or resistor comprises a top assembly and bottom header, and an insulating shell or casing. The top plate assembly is co-molded with a plastic bearing member for the adjustable shaft carrying the contact brush or wiper. The top plate is also co-molded with the insulating brush block on the adjustable shaft. A plastic sleeve is positioned between the brush block and the adjusting shaft to secure the block in place, provide a friction-clutch drive for turning the brush block and contact wiper which will slip if the shaft is turned after the block strikes the stop at the end of its travel, and act as a cushion between the metallic shaft and the molded block when the potentiometer is sub-

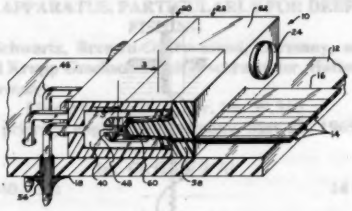
jected to relatively large temperature changes. Terminals are provided, in the bottom header, for the contact wiper and resistance element. The resistance element may be of any suitable type, such as wire-wound, carbon film, thick metal or metal oxide film or thin metal or metal oxide film.

3,696,319

FLAT CONDUCTOR CABLE CONNECTOR

Billy E. Olsson, New Cumberland, Pa., assignor to Berg Electronics, Inc., New Cumberland, Pa.

Filed Aug. 20, 1970, Ser. No. 65,407
Int. Cl. H05k *1/04*; H01r *7/28*
U.S. Cl. 339—17 F 13 Claims



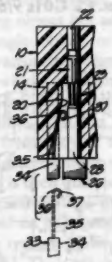
A flat conductor cable connector of the type having a first body with a recess formed in the body and terminals positioned along the recess and a second body having a nose about which the conductors of a flat cable are wrapped so that when the nose is inserted into the recess an electrical connection is formed between each conductor and a terminal in the first body. Each terminal includes a stop extending into the path of insertion of the nose to limit insertion of the nose into the recess.

3,696,320

TELEPHONE PATCH SYSTEM

Donald J. Smith, Woodland Hills, Calif., and Seth Foster, Bellview, Wash., assignors to Smith-Schreyer & Assoc., Inc.

Filed Sept. 24, 1970, Ser. No. 75,445
Int. Cl. H01r *13/64, 23/02*
U.S. Cl. 339—18 B 19 Claims



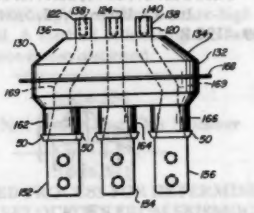
A telephone patch system includes an insulating terminal block having a plurality of passageways and guideways arranged together in a series of columns. Each passageway includes a contact pin which is connected at one end to a telephone line. Each column is adapted to receive a patching plug and a monitoring plug. The patching plug includes a plurality of contact members and a guide member. Each contact member is adapted to extend into a passageway and make electrical contact with the unconnected end of a contact pin. The guide member is adapted to cooperate with a guideway to orient the patching plug.

3,696,321

ELECTRICAL CONNECTOR

James Joseph Cooper, Jr., St. Louis, Mo., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Sept. 14, 1970, Ser. No. 71,976
Int. Cl. H01r *13/52*
U.S. Cl. 339—94 A 3 Claims



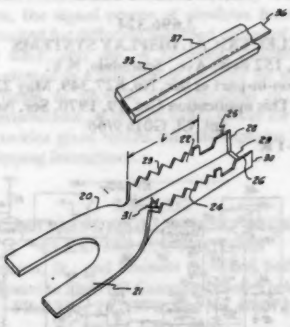
A connector for making one or more electrical connections to a threaded male or female connection for power distribution applications such as power transformer connections especially in locations in which considerable moisture or water is likely to be present. A conductive connector is designed to mate at one end with the transformer connection within the transformer tank. A body, preferably tubular in shape, is suitably molded or cast about the connector and should be composed of a suitable water impervious resin such as epoxy or the like. The molded body terminates at one end in a bushing section for each transformer connection. The molded body at the other end terminates in a tubular cylindrical wall for each connector. Each cylindrical wall terminates in a peripheral raised rim from which a connector tang centrally protrudes. The raised rim mates with a shoulder on the inside of a waterproof, elastic, tubular sleeve to fully insulate the terminal connection against exposure.

3,696,322

INSULATED FLAT WIRE TERMINAL

Paul J. Spangler, Novelty, and Thomas E. Morgan, Cleveland Heights, both of Ohio, assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed June 1, 1970, Ser. No. 41,789
Int. Cl. H01r *11/20*
U.S. Cl. 339—97 C 8 Claims



Before crimping, a flat wire connector has a cross-section which is somewhat U-shaped with upstanding side plates having serrations on the top and a rosette of upstanding tines in the floor. When the connector is crimped, the flat wire is pressed down over the rosette, the tines of which pierce the insulation. The two upstanding side walls are rolled in toward the middle of the U, and the serrations are driven downwardly to pierce the insulation and stake the flat wire. The length of the side walls is such that the flat wire may be badly out of

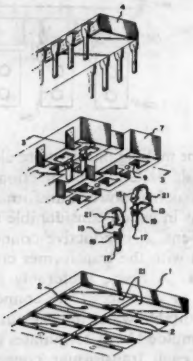
alignment with respect to the connector and yet insure a good electrical connection.

3,696,323

DIP HEADER

Robert John Kinkaid, New Cumberland, and John Carl Asick, Harrisburg, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Feb. 27, 1970, Ser. No. 15,176
Int. Cl. H01r *23/02, 5/04*
U.S. Cl. 339—192 R **7 Claims**



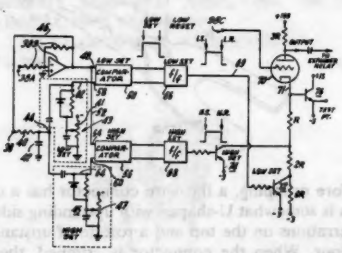
The disclosure relates to a header for receiving electrical contact members and retaining same therein, the header being utilized to receive electrical components through apertures at the top surface thereof which make contact with the electrical contact members therein, the electrical contact members depending below the header for contact and passage through apertures in an associated printed circuit board or the like for subsequent dip soldering thereto. The electrical contact member includes an apertured region thereon between the point of soldering to the printed circuit board and the contact portion thereof for mating with an external component which passes through the top surface of the dip header to prevent the creeping of solder into the resilient contact portion thereof during dip soldering to retain the desired resiliency of the contact for providing for the proper electrical connection to the external components.

3,696,324

ELECTRICAL DISPLAY SYSTEMS

Gilbert Baum, 152 Brite Ave., Scarsdale, N.Y.

Continuation-in-part of Ser. No. 827,349, May 23, 1969, abandoned. This application Oct. 19, 1970, Ser. No. 82,227
Int. Cl. G01s *9/66*
U.S. Cl. 340—1 R **15 Claims**



Ultrasonographic display systems provide synchronization of the transducer scanning motion with the horizontal sweep of a cathode ray tube, so that horizontal displacement of the beam on the tube face is proportional to the corresponding displacement of transducer in its scanning motion. Deflection and intensity modulation of the tube beam are combined and preferably a novel expander circuit is provided for highlighting the echo signal of interest, making the system particularly suitable for medical diagnosis of tissue abnormalities.

3,696,325

COMPLIANT SUSPENSION CABLE

Charles V. Tallman, Rye Beach, N.H., assignor to The United States of America as represented by the Secretary of the Navy

Filed May 14, 1970, Ser. No. 37,074
Int. Cl. H04b *11/00*; B63b *21/52*
U.S. Cl. 340—2 **1 Claim**

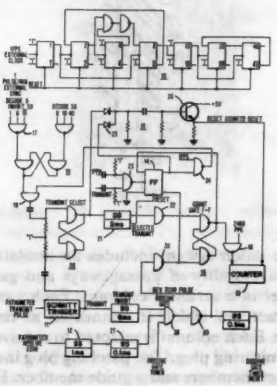
Compliant, nonstrumming, high strength composite cable for sonobuoy suspension system. Nonabsorbent relatively inelastic strands of textile yarn are bound onto an elastomeric warp strand by two counterwound helixes of textile stretch yarn. The inelastic yarn forms random transverse loops along the cable by protruding outwardly through the openings between the helical windings.

3,696,326

DEPTH SOUNDER DIGITIZER

Silvan E. McAlpin, Dallas, Tex., assignor to Mobil Oil Corporation

Filed May 21, 1970, Ser. No. 39,494
Int. Cl. G01s *9/68*
U.S. Cl. 340—3 R **5 Claims**



A water depth digitizer produces a digital readout from a depth sounder of the type which produces an acoustic ranging pulse and which includes a transducer producing a receive

signal representing the return of a reflected acoustic ranging pulse. A digital counter is started in response to an acoustic ranging pulse and is stopped in response to the receive signal occurring after the selected ranging pulse. In order to prevent erroneous readings which occur because the reflected acoustic ranging pulse is not of sufficient amplitude to be detected, a circuit is provided to detect valid information. The digital counter is reset when a receive signal is not received before the next occurring acoustic ranging pulse.

3,696,327

Patent Not Issued For This Number

3,696,328

SONAR APPARATUS, PARTICULARLY FOR DEEP-SEA FISHING

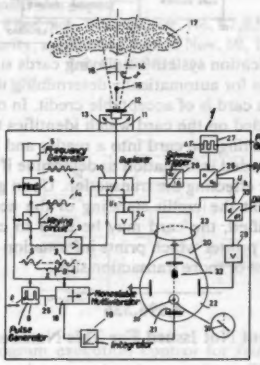
Werner Schwartz, Bremen-Oberneuland, Germany, assignor to Fried Krupp Gesellschaft mit beschraenkter, Haftung, Essen, Germany

Filed May 21, 1970, Ser. No. 39,315

Claims priority, application Germany, May 28, 1969, P 19 27 172.8

Int. Cl. G01s 9/70

U.S. Cl. 340—3 R **14 Claims**



A sonar system, particularly for use for deep-sea fishing, which produces an indication, either optical or acoustical, representative of the received signals which shows not only the range of the reflecting object but additionally whether the reflecting object is a single object or a plurality of closely bunched objects. The transmitted signals are relatively long keyed pulses each of which contains a plurality of non-monochromatic oscillations which have a distinct predetermined arrangement in time, and has a broad bandwidth as compared to the center frequency of the oscillations. A voltage proportional to the instantaneous or momentary frequency of the received signals is then utilized to modulate the ranging or distance proportional voltage in the indicating device, e.g. a cathode ray tube of an echograph, in order to produce the additional indication representative of the type of reflecting object.

3,696,329

MARINE STREAMER CABLE

Gerald D. Hazelhurst, Houston, Tex., assignor to Mark Products, Inc., Houston, Tex.

Filed Nov. 12, 1970, Ser. No. 88,616

Int. Cl. H01b 7/12

U.S. Cl. 340—7 R **4 Claims**

A streamer cable is disclosed that has a plurality of float members inside its outer sheath to add buoyancy and allow the diameter of the cable to be kept to a minimum. The sensors or hydrophones carried by the cable are connected accoustically to the water by a filler having good accoustic properties. The filler is either an elastomeric material cured in place or a high

temperature-low viscosity, low temperature-high viscosity, grease-like material. A method of locating the float members for uniform buoyance is also disclosed.

3,696,330

Patent Not Issued For This Number

3,696,331

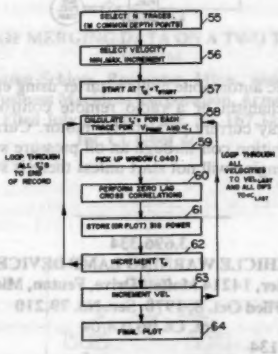
AUTOMATED PROCESS FOR DETERMINING SUBSURFACE VELOCITIES FROM SEISMOGRAMS

Norman J. Guinzy, Austin; Clyde W. Kerns, Irving; William H. Ruehle, Duncanville, and Henry E. Teague, Arlington, all of Tex., assignors to Mobil Oil Corporation

Continuation of Ser. No. 769,590, Oct. 22, 1968, abandoned, which is a continuation-in-part of Ser. No. 752,600, Aug. 14, 1968, abandoned. This application July 22, 1970, Ser. No. 57,254

Int. Cl. G01v 1/28

U.S. Cl. 340—15.5 DP **9 Claims**



In the determination of acoustic velocity from a suite of seismograms, the signal power of windows from the seismograms is detected for different assumed values of velocity, vertical travel time, and dip. A function indicative of signal presence is plotted as a function of velocity for different vertical travel times to provide an indication of the acoustic velocity characteristic. A plot of signal power for different dip searches provides good results for seismograms from an area including dipping formations.

3,696,332

TELEMETERING DRILL STRING WITH SELF-CLEANING CONNECTORS

Leon L. Dickson, Jr., and Emmett G. Ward, both of Houston, Tex., assignors to Shell Oil Company, New York, N.Y.

Filed May 25, 1970, Ser. No. 40,073

Int. Cl. G01v 1/16

U.S. Cl. 340—18 LD **4 Claims**

A telemetering drill string in which segments of an insulated electrical conductor are joined by connectors in the pipe

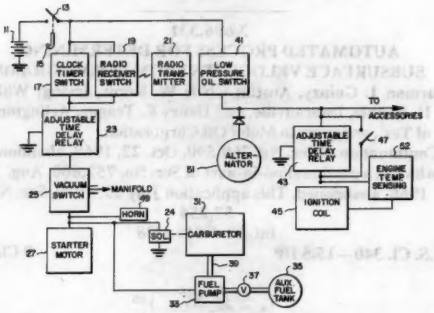
joints is improved by electrical connectors having generally ring-shaped contact-making surfaces which are wiped together as the pipe joints are interconnected. A process of telemetering while drilling in a deep borehole is improved by installing a wire line telemetering system between the drill bit and a section of the above type of segmented electrical conductor-containing telemetering drill string.

3,696,333

AUTOMATIC ENGINE STARTER

Willard Mott, RFD 2, Marion, Ky.

Filed June 10, 1970, Ser. No. 45,055
Int. Cl. B60k *33/00*
U.S. Cl. 340—52 R **8 Claims**



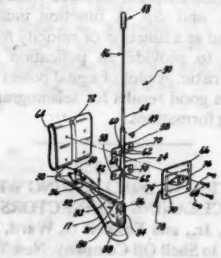
An automatic automobile engine starter using either clock-switching mechanism or a radio remote control switching system to supply current to a starter motor. Current is supplied to the ignition coil through an oil pressure switch to insure that the engine will not start unless there is sufficient oil pressure.

3,696,334

VEHICLE WARNING LAMP DEVICE

John C. Demeter, 14214 Moffett Drive, Fenton, Mich.

Filed Oct. 8, 1970, Ser. No. 79,210
Int. Cl. B62j *8/04*
U.S. Cl. 340—134 **10 Claims**



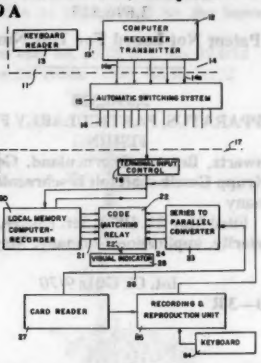
A device for supporting a lamp adapted for use as a warning light on motorcycles and the like. The device has an L-shaped configuration with a horizontal leg adapted to be mounted adjacent the motorcycle seat and a vertical leg disposed rearwardly of the seat and extending upwardly to support the lamp and a backrest. The upwardly extending leg includes a pair of telescopically engaging tubular members which permit retraction and extension of the leg for adjusting the height of the lamp with respect to the motorcycle. The device includes means for mounting a taillight and directional signals.

3,696,335

CREDIT VERIFICATION SYSTEM

Jerome H. Lemelson, 85 Rector St., Metuchen, N.J.

Continuation-in-part of Ser. No. 311,252, Sept. 24, 1963, Pat. No. 3,511,940, which is a continuation-in-part of Ser. No. 685,692, Sept. 23, 1957, Pat. No. 3,106,612, and a continuation-in-part of Ser. No. 417,386, Dec. 10, 1964, Pat. No. 3,434,130, which is a continuation-in-part of Ser. No. 142,748, Aug. 28, 1961. This application April 21, 1970, Ser. No. 30,450
Int. Cl. G06f *7/04*; H04q *5/02*
U.S. Cl. 340—149 A **11 Claims**



A credit verification system employing cards such as credit cards, and means for automatically determining if an account represented by a card is of acceptable credit. In one form, information recorded on the card which identifies the account, is read after inserting the card into a reader and is compared with locally recorded information to determine if the account is acceptable for effecting the transaction. Upon generation of an indication that the credit standing of the account is acceptable or verified, the card may be used to complete the transaction in a printer which prints information recorded on the card onto one or more transaction slips.

3,696,336

Patent Not Issued For This Number

3,696,337

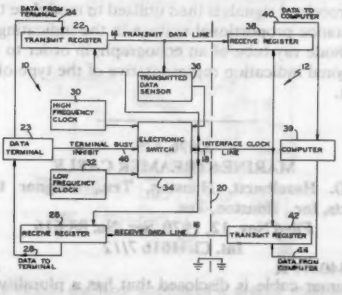
Patent Not Issued For This Number

3,696,338

DATA TERMINAL-COMPUTER SERIAL INTERFACE SYSTEM HAVING AUTOMATIC BAUD RATE SWITCHING

Richard B. Preiss, Beaverton, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Aug. 20, 1970, Ser. No. 65,401
Int. Cl. G06f *3/00*
U.S. Cl. 340—172.5 **6 Claims**



Interface circuits for transmitting digital information serially from a computer data terminal through a transmit data

line to a computer and also in the reverse direction through a receive data line from the computer to the data terminal provide automatic electronic switching responsive to transmission of information through the transmit data line for disconnecting the pulse output of a high frequency clock from a single interface clock line, and at the same time connecting a lower frequency clock to this clock line. The clocks control transmit and receive registers in the interface to produce one rate of data transmission when no data is being transmitted in the direction from the data terminal to the computer and a lower rate of data transmission when data is being transmitted in such direction. A terminal busy inhibit signal from the data terminal may also be employed to prevent transmission of clock pulses by the clock line when the data terminal is not ready to receive data.

3,696,339

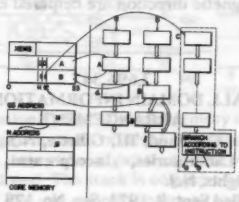
Patent Not Issued For This Number

3,696,340

MICROPROGRAM EXECUTION CONTROL FOR FAULT DIAGNOSIS

Shigenori Matsushita; Fumitaka Sato, and Haruhisa Miura, all of Tokyo, Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed Nov. 9, 1970, Ser. No. 87,832
Claims priority, application Japan, Nov. 10, 1970, 45/89281
Int. Cl. G06f *9/16*
U.S. Cl. 340—172.5 **12 Claims**



A microprogram execution control for fault diagnosis includes a first and a second address register. The first address register designates the microaddress of one microstep stored in a fixed memory which is designated by a diagnostic microprogram information succeeding a diagnostic program instruction from a main memory. After one microstep is executed, the first address register designates a specified microaddress in the fixed memory, and the second address register stores the microaddress of a next microstep to be executed. At a step during the succeeding diagnostic routine, the content of the second address register is stored into the main memory.

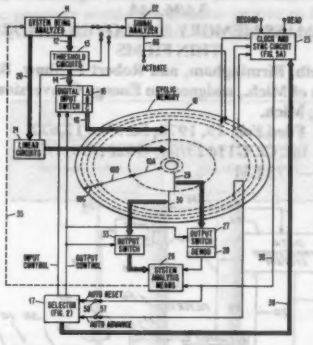
3,696,341

SIGNAL ANALYSIS

Robert Z. Watts, and Robert L. Weiss, both of Longmont, Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 3, 1970, Ser. No. 94,661
Int. Cl. G11b *13/00*
U.S. Cl. 340—172.5 **7 Claims**

A programmable cyclic recorder selectively records signals on a plurality of analog and digital record tracks. A signal analyzer responds to an event occurring in a system being analyzed (which supplies the signals to be recorded) for stopping further recording and holding all recorded signals in the cyclic recorder. The recorded signals are then selectively read back track by track and analyzed for determining system performance. Synchronizing pulses are recorded contemporaneously with all of the tracks for accommodating a wide variety of signals. Various recording and readback circuits are provided having different signal delays. The sync signal from the sync track is delayed differing amounts in accordance with the signal delays of the various tracks to provide a constant



real time signal reference to system analysis means. Synchronization of signal analysis is based upon the events which stop the recording.

3,696,342

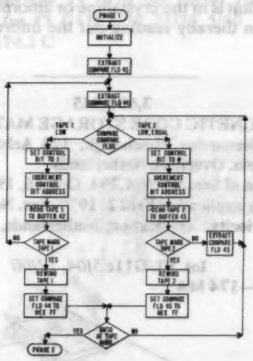
Patent Not Issued For This Number

3,696,343

METHOD OF MERGING DATA ON A TWO TAPE DRIVE SYSTEM

Phillip Christian Schloss, Rochester, Minn., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed July 29, 1971, Ser. No. 167,116
Int. Cl. G06f *7/32*
U.S. Cl. 340—172.5 **4 Claims**



Records from tapes one and two are merged in a logical sequence on tape three in a two-tape drive system. Prior to the merge operation sequence, control bits, ones and zeros, developed in response to high, low, equal comparisons of the records on tapes one and two, are stored. Then in two successive operations, records, first from tape one and then from tape two, are written on tape three, in sequence as determined by the control bits. While records from tape one are being written, control bits indicating that records from tape two are next in sequence cause zeros to be written on tape three to reserve space for records from tape two. After all records have been written from tape one and zeros have been written to reserve space for records from tape two, a tape mark is written on tape three and tapes one and three are rewound. Tape two is mounted in place of tape one and whenever zeros are read from tape three, records from tape two are inserted. When the

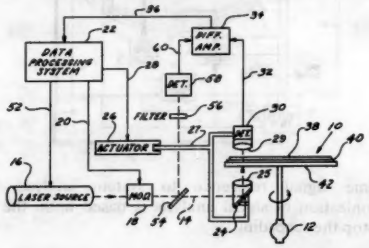
tape mark on either tape two or three is detected, the operation is complete.

3,696,344

OPTICAL MASS MEMORY EMPLOYING AMORPHOUS THIN FILMS

Julius Feinleib, Birmingham, and Robert F. Shaw, Bloomfield Hills, both of Mich., assignors to Energy Conversion Devices, Inc., Troy, Mich.

Filed Feb. 19, 1970, Ser. No. 12,622
Int. Cl. G11c *13/04*; G02f *1/30, 1/36*
U.S. Cl. 340—173 LM **2 Claims**



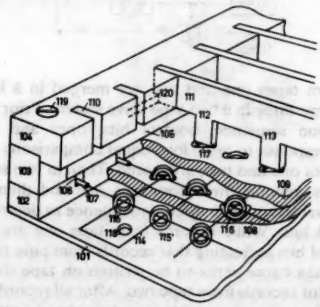
This optical mass memory utilizes an amorphous semiconductor thin film which can be switched between a generally amorphous or disordered state and a crystalline or more ordered state by applying a laser beam. The laser beam is modulated and scanned across the amorphous film to record and erase information by switching the state of certain regions of the film. The same laser beam modulator and scanner can be used to read the information stored on the film by detecting whether the film is in the amorphous or crystalline state at any given location. The laser beam is composed of at least two frequencies, one of which is absorbed by the amorphous film and is used to write and also erase information on the film. The amorphous film is transparent to the other frequency and the transmission of this frequency is used to determine whether the film is in the crystalline or amorphous state at any given location thereby reading out the information recorded therein.

3,696,345

MAGNETIC CORE STORAGE MATRICES

Gerhardus Bernardus Visschedijk, 123 Achterholkse Malenweg, Hengelo, Overijsel, Netherlands

Continuation of Ser. No. 404,294, Oct. 16, 1964, abandoned. This application Feb. 2, 1970, Ser. No. 7,336
Claims priority, application Netherlands, Oct. 18, 1963, 299,494
Int. Cl. G11c *5/04, 17/00*
U.S. Cl. 340—174 MA **7 Claims**



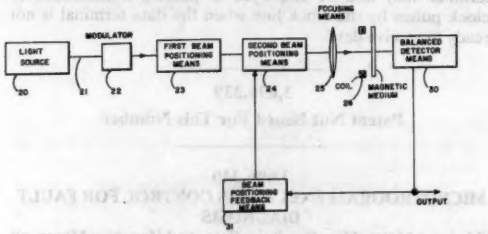
A magnetic core storage matrix comprises a rigid support plate of magnetic material that supports a layer of flexible plastic material impregnated with fine iron powder and containing recesses in the form of a matrix. A plurality of magnetic storage cores are mounted in the recesses. Information is recorded in the storage matrix by applying saturating magnetic fields to selected ones of the cores.

3,696,346

BEAM ADDRESSED OPTICAL MEMORY

James David Zook, Burnsville, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Aug. 30, 1971, Ser. No. 175,884
Int. Cl. G11c *11/42, 11/14*
U.S. Cl. 340—174 YC **8 Claims**



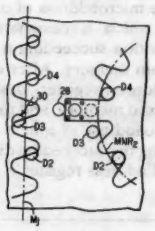
A beam addressed optical memory utilizing a magnetic medium for information storage is provided with improved tracking. Alternate tracks of first and second magnetic direction are provided on the magnetic medium. The interface between adjacent tracks defines a domain wall boundary. A plurality of alterable information bits having either the first or the second magnetic direction are centered essentially on the boundary.

3,696,347

SINGLE WALL DOMAIN INFORMATION TRANSFER ARRANGEMENT

John Alexander Copeland, III, Gillette, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Sept. 8, 1971, Ser. No. 178,740
Int. Cl. G11c *11/14, 19/00*
U.S. Cl. 340—174 TF **8 Claims**



The transfer of information between single wall domain propagation channels in each of which information is represented by the side of a rail along which a domain moves is affected by a relay domain, the position of which is modified in accordance with information in one channel to change the side of the rail along which domains in the other move.

3,696,348

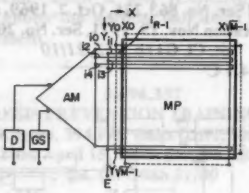
INFORMATION WRITING CIRCUIT FOR MEMORY DEVICE

Tatsuo Kobayashi, Yokohama, Japan, assignor to E.R.D. Corporated, Tokyo, Japan

Filed April 20, 1970, Ser. No. 29,996
Int. Cl. G11c *5/08, 7/02*
U.S. Cl. 340—174 AC **2 Claims**

In a three-dimensional current coincident mode memory

plane, inhibit lines, common-inhibit-sense lines and/or sense lines are divided into a plurality of pairs of wirings so as to be



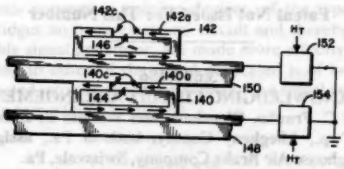
selectively driven through an address decode matrix by drivers and gate switches.

3,696,349

BLOCK ORGANIZED RANDOM ACCESS MEMORY

Alan D. Kaske, and Gerald F. Sauter, both of Minneapolis, Minn., assignors to Sperry Rand Corporation, New York, N.Y.

Filed June 4, 1971, Ser. No. 149,970
Int. Cl. G11c *11/14*
U.S. Cl. 340—174 NC **5 Claims**



A three-dimensional magnetizable memory stack of Mated-Film memory elements each of which provides a substantially closed flux path, except for a gap transverse to the element's easy axis, is disclosed. The stack is comprised of a plurality of superposed, i.e., laid one upon the other so as to make all like-oriented-parts vertically coincide, similar transfer arrays sandwiched between a write array and a read array, all arrays having similarly arranged Mated-Film write/read, transfer memory elements with a gap in the top layer for providing an external longitudinal steering field $\pm H_L$ across the gap that is inductively coupled to each next superposed memory element. Information is written into the memory elements of the write array using word-organized coincident currents. Information from each memory element is then transferred vertically through the stack in successive transfer operations between each next super-posed memory element by using the steering field $\pm H_L$ of the next bottom memory element in coincidence with an applied transverse DC drive field H_T at the next top memory element. The information written in the bottom write array is successively transferred or shifted from transfer array to transfer array and into the top read array from which it is read out in a word-organized random-access manner.

3,696,350

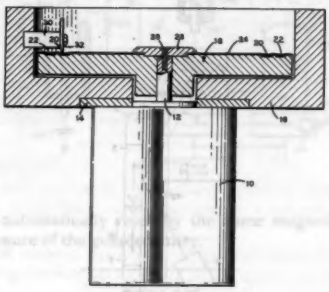
CONNECTED ROTATABLE PLIABLE DISK AND RIGID DISK WITH ANNULAR GROOVE FOR RECORDING USING AN AIR BEARING

William D. Cohen, 4 Fall Oak Drive, Huntington, N.Y., and David E. Worster, 265 W. 5th St., West Islip, N.Y.

Filed Aug. 27, 1970, Ser. No. 67,349
Int. Cl. G11b *5/60*
U.S. Cl. 340—174.1 E **5 Claims**

A rotating rigid disk has concentrically connected thereto a pliable disk record medium. An annular groove is provided in the surface of the rigid disk opposite the pliable disk record medium. A transducer is fixed in close proximity to the surface of the pliable disk record medium opposite the annular groove.

The connected disks are rotated at sufficiently high speed to generate a centrifugal force on the pliable disk and a subatmospheric pressure within the annular groove so that the centrifugal force on the pliable disk and the force generated by



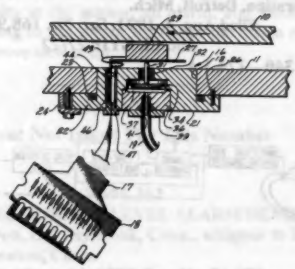
the sub-atmospheric pressure within the annular groove dynamically balance with the aerodynamic forces established between the surface of the pliable disk and the end of the transducer extending within the region defined by the annular groove whereby an air bearing is established between the transducer and the surface of the pliable disk.

3,696,351

RECORDING HEAD MOUNTING AND ACTUATOR COMBINATION

Robert G. Groom, Thousand Oaks, and Collen K. Brimm, Canoga Park, both of Calif., assignors to Burroughs Corporation, Detroit, Mich.

Filed Nov. 23, 1970, Ser. No. 91,729
Int. Cl. G11b *5/50, 21/26, 5/60*
U.S. Cl. 340—174.1 C **2 Claims**

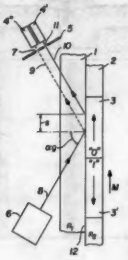


A recording head mounting arrangement is provided for precisely positioning a plurality of recording heads in a housing adjacent a face of a magnetic memory disk. Each recording head is mounted on an individual assembly for individual removal if desired. Holes for mounting the head assemblies are provided in the housing in precise positions and means are provided for keying the assemblies to the housing for maintaining head orientation. Each individual assembly comprises a circular body extending through the housing with the head mounted on a conventional gimbal spring inside the housing. A pneumatic actuator is concentric with the circular body for advancing and retracting the head. Means are provided for passing electrical leads from the recording head to the outside of the housing.

3,696,352
MAGNETO-OPTICAL READOUT BEAM SHIFTED AS A FUNCTION OF INFORMATION

Heinz Schilling, Magdeburg, Germany, assignor to VEB Kombinat Robatron, Radeberg, Wilhelm-Pieckstrasse, Germany

Filed Nov. 25, 1970, Ser. No. 92,625
Int. Cl. G11b 7/12
U.S. Cl. 340—174.1 M 14 Claims

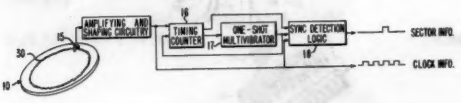


Magnetically stored information is retrieved or picked-up in a magneto-optical manner by successively scanning magnetic storage elements in a magnetic storage member with a beam of polarized electro-magnetic radiation at such critical angle of incidence that the reflected beam is shifted and reflected or reflected without shift depending upon the direction of magnetization present in said storage elements which direction may assume but two possible values representing a digital "1" or a digital "0." The shift or its absence is ascertained as representing said information by means of at least one receiver and an orifice means or shutter positioned relative to said magnetic storage member and relative to a scanner so as to assure said critical angle. The storage member comprises a total reflection layer on top of a layer including said magnetic storage elements.

3,696,353
TIMING TRACK WITH DISCONTINUITY

Virgilio J. Quiogue, Plymouth, Mich., assignor to Burroughs Corporation, Detroit, Mich.

Filed Aug. 4, 1971, Ser. No. 168,962
Int. Cl. G11b 27/22
U.S. Cl. 340—174.1 A 11 Claims

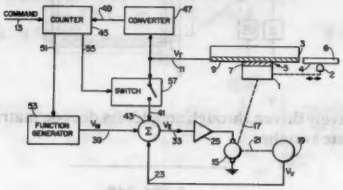


A method and circuit for deriving timing signal information required by present day rotating magnetic storage media from a single control track of N clock pulses, where the N Clock pulses are spaced in at least (N + 1) clock pulse periods or cycles, and where the trailing edge of each clock pulse coincides with the trailing edge of a pulse period or cycle. Conceptually, a comparison is continuously made between the time durations between the trailing edges of pairs of successive clock pulses and when the time durations differ by a predetermined amount, a sync pulse is generated corresponding to a pulse normally derived from a conventional sector track. A pulse train generator and a one-shot multivibrator employing an R-C timing network coordinated by a sync detection logic system are used to effect the comparison and generate the sync pulse.

3,696,354
POSITION CONTROL SYSTEM

Gaston Albert Palombo, 28 Rose Ave., Watertown, Mass., and Thomas A. Boissevain, 24 Paul Revere Road, Bedford, Mass.

Continuation of Ser. No. 863,226, Oct. 2, 1969, abandoned.
This application Nov. 19, 1971, Ser. No. 200,574
Int. Cl. G11b 5/52, 21/10
U.S. Cl. 340—174.1 C 8 Claims



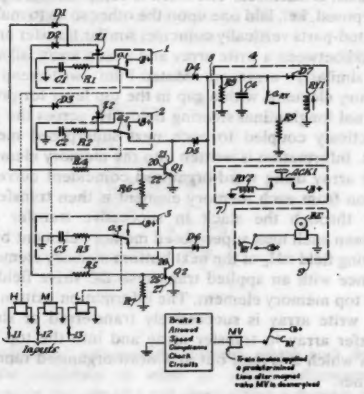
Positioning apparatus for controlling the relative placement of two members in which coarse control is performed in a first mode and fine control in a second mode. Switching between modes occurs automatically. A profile utilizing discrete signals is used for minimizing transit time.

3,696,355
Patent Not Issued For This Number

3,696,356
ACKNOWLEDGING CIRCUIT ARRANGEMENT

Raymond C. Franke, Glenshaw, and William B. Dufer, Penn Hills Twp., Allegheny County, both of Pa., assignors to Westinghouse Air Brake Company, Swissvale, Pa.

Filed June 17, 1971, Ser. No. 153,966
Int. Cl. G08b 21/00
U.S. Cl. 340—213.1 20 Claims



An acknowledging arrangement comprising a charging circuit associated with each input signal, a warning actuating and acknowledging circuit means, and a secondary discharge circuit associated with each input signal except the least restrictive. Each charging circuit is controlled in response to the reception of the associated input signal to store a predetermined amount of operating energy. When a more restrictive signal is received, this stored energy is discharged to actuate a warning indicator. A time delay arrangement included in the actuating circuit delays the warning for a preset time to eliminate momentary false restrictive signals. A single relay is actuated to control the warning indicator for all input signals. This same relay responds to acknowledgement action by the

train operator to halt the warning and restore the brake magnet valve, if other safety checks are proper. The secondary discharge circuits drain the stored energy from the activated charging circuit, when a less restrictive input signal is received, to inhibit the warning indication and the need for acknowledgement.

3,696,357

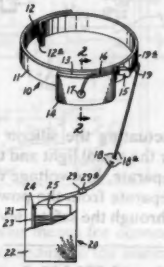
ENURESIS PREVENTION TRAINING DEVICE

Bernard W. Kilgore, 394 Fair Oaks Drive, Mora, Minn.

Filed April 15, 1970, Ser. No. 28,722

Int. Cl. G08b *21/00*

U.S. Cl. 340—235 **9 Claims**



Enuresis prevention training devices, of the type wherein urine bridges an open electrical circuit and thereby actuates an audible signal generator, are made more effective and less distracting to others if the signal generated is of low volume and directed into the ear of the trainee. The signal generator is desirably carried on a headband.

3,696,358

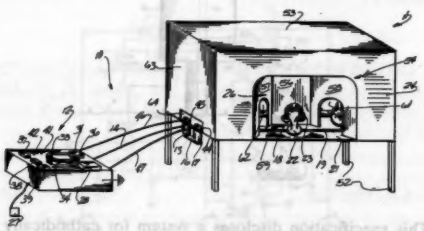
CONTROL CIRCUITRY FOR AN ADVERTISING DISPLAY

Louis J. Vasku, 711 N. Bellevue Blvd., Bellevue, Nebr.

Filed April 21, 1971, Ser. No. 136,798

Int. Cl. G08b *3/10*

U.S. Cl. 340—221 **14 Claims**



An electrical circuitry for coordinating the movement of a continuous and repetitive series of advertising display items with an audible program having therein a prerecorded commentary relative to the display items wherein a movable display apparatus is operably connected to an audible system through the electrical circuitry, and the audible system includes a magnetic tape having sensor tapes affixed thereto which coact with relays in the electrical circuit to coordinate the movement of the apparatus to the movement of the magnetic tape.

3,696,359

INTRUSION ALARM SYSTEM

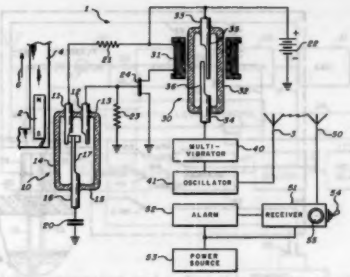
Gerald F. Ross, Lexington, and Hugh C. Maguire, Westford, both of Mass., assignors to Sperry Rand Corporation

Filed Jan. 26, 1971, Ser. No. 109,866

Int. Cl. G08b *13/08*

U.S. Cl. 340—224 **8 Claims**

A wireless point of entry intrusion alarm system having a central monitor and alarm cooperates with magnetically actuable entry detectors placed at potential entry locations. Each



sensor is automatically reset by the same magnetic means upon reclosure of the guarded entry.

3,696,360

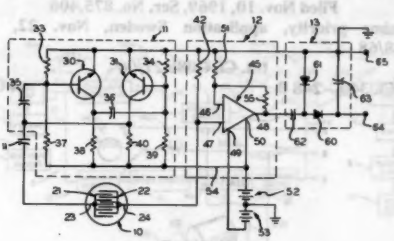
IMPENDING CONDENSATION ALARM

Wieslaw Gajewski, Chicago, Ill., assignor to Vapor Corporation, Chicago, Ill.

Filed June 16, 1971, Ser. No. 153,614

Int. Cl. G01n *25/00*

U.S. Cl. 340—235 **5 Claims**



Device for warning of impending condensation including a sensor in contact with the element being monitored to measure conductivity at the sensor, an alarm, and electrical circuitry responding to the sensor to trigger the alarm at a given temperature above dew point.

3,696,361

Patent Not Issued For This Number

3,696,362

LOW ELECTROLYTE LEVEL ALARM DEVICES

Richard L. Sieron, Old Saybrook, Conn., assignor to Dual-Lite Company, Newton, Conn.

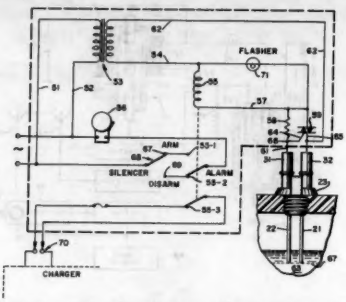
Filed Sept. 14, 1970, Ser. No. 71,807

Int. Cl. G08b *21/00*

U.S. Cl. 340—244 C **14 Claims**

Two electrodes immersed in an electrolyte solution shunt the gate of a "Triac" solid state switching device connected in parallel with a current-limiting resistor which is connected via an alarm device across a power source. When the electrodes are immersed below the surface of the electrolyte, they serve as a closed switch drawing minimum current through the current limiting resistor, thus biasing the "Triac" in its non-conductive mode and trickling through the alarm device at amperage levels so low that the alarm device does not respond. When the electrolyte level falls, leaving the electrodes above the electrolyte solution, they become an open circuit. This reduces the trickle current to zero and applies full power source voltage to the gate of the "Triac," triggering the "-

Triac" from a current blocking mode to a conductive mode. This permits an alarm current to pass through the "Triac,"



thereby drawing this higher amperage current through the alarm device, producing an alarm signal indicating the level of the electrolyte.

3,696,363

FAILURE INDICATING ARRANGEMENTS FOR GYROSCOPES

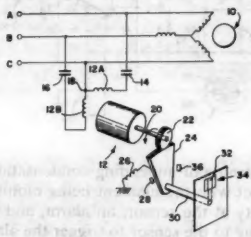
Bo Hans Gunnar Ljung, Canoga Park, Calif., assignor to AGA Aktiebolag, Lidingo, Sweden

Filed Nov. 10, 1969, Ser. No. 875,406

Claims priority, application Sweden, Nov. 22, 1968, 15888/68

Int. Cl. G08b *21/00*

U.S. Cl. 340—248 B **4 Claims**



An arrangement for indicating failures in the three-phase voltage supply for a gyro motor of the induction type includes a servo motor connected in parallel with the gyro motor for controlling movement of an indicator vane. The servo motor includes a pair of windings which are respectively connected between a common phase and each of the remaining phases of the three-phase supply. These windings produce a torque which acts in opposition to the torque produced by a spring which normally biases the vane into a failure-indicating position.

3,696,364

SAFETY DEVICE MONITORING SYSTEM

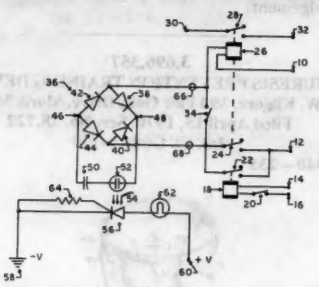
Michael R. Lavelle, 9331 North Delaware St., Indianapolis, Ind.

Filed June 21, 1971, Ser. No. 154,734

Int. Cl. G08b *21/00*

U.S. Cl. 340—252 R **9 Claims**

For use in monitoring a safety device switch through which alternating current flows, monitoring means comprising a rectifier connected across such a switch to provide a direct current output when the switch is opened, a light and a capacitor connected in series across the output of the rectifier, a signal light, and a light-actuated silicon controlled rectifier. The silicon controlled rectifier is positioned and arranged to be actuated or rendered conductive by light from the light which is in series with the capacitor. When the safety device switch is opened, direct current provided by the rectifier charges the capacitor to a predetermined level. During this charging process, the light in series with the capacitor



produces light for actuating the silicon controlled rectifier. The power source for the signal light and the silicon controlled rectifier may be a separate, low voltage direct current power source completely separate from the power source producing the current flowing through the safety device switch.

3,696,365

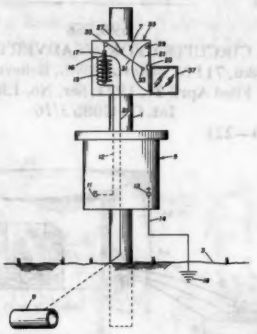
CATHODIC PROTECTION SYSTEM

Charles F. Ward, Midland, Tex., assignor to Mobil Oil Corporation

Filed July 30, 1971, Ser. No. 167,757

Int. Cl. G08b *5/14*

U.S. Cl. 340—253 E **10 Claims**



This specification discloses a system for cathodically protecting a metallic body which is in contact with an electrolyte. This system employs in combination a rectifier, a coil and plunger forming a solenoid, a mechanical signaling device, a means mechanically connecting the plunger of the solenoid with the mechanical signaling device, a metallic body in contact with an electrolyte, a ground bed, and a means forming an electrical circuit including the rectifier, coil, metallic body, ground bed, and electrolyte. Loss of current due to rectifier failure permits the mechanical flag to appear as a warning.

3,696,366

GROUND DETECTOR SYSTEM HAVING FAST RESPONSE AND DECOUPLING OF DETECTOR CIRCUIT

Charles H. Parsons, Monroe, Conn., assignor to Edwards Company, Inc., Norwalk, Conn.

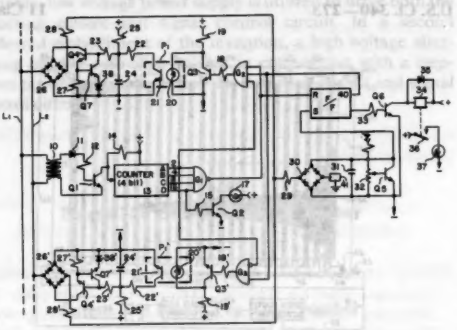
Filed March 22, 1971, Ser. No. 126,813

Int. Cl. G08b *21/00*

U.S. Cl. 340—255 **20 Claims**

A detector is disclosed which senses ground currents exceeding a predetermined magnitude in either one of a pair of

line wires. A counter causes each line to be periodically and alternately connected to the detector for individual sensing of each line. An alarm system is provided which is responsive to a signal from the detector to generate a warning signal when a current exceeding said predetermined magnitude is sensed.



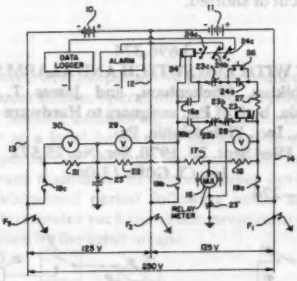
The structure includes means for connecting each line to the detector and for responding to the alarm signal by decoupling the detector from the lines to thereby eliminate any contribution to the ground current which might be contributed by the presence of the detector coupled to the lines.

3,696,367

GROUND FAULT DETECTION CIRCUIT

Sayed-Ibrahim S. Inamdar, Newark, Calif., assignor to Bechtel International Corporation, San Francisco, Calif.

Filed April 21, 1971, Ser. No. 135,915
Int. Cl. G01r *31/02*
U.S. Cl. 340—255 **10 Claims**



A ground fault detection circuit for use with dual voltage battery systems, comprising first and second ground connected circuits which are alternatively energized depending on the location of a ground fault in any one of three lines connected to the system, and including means for visually observing the extent of such ground faults.

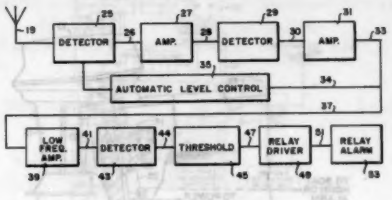
3,696,368

RADIO FREQUENCY BURGLAR ALARM SYSTEM

Ray B. Kauffman, 9500 Underwood St., Seabrook, Md.

Filed April 15, 1969, Ser. No. 816,320
Int. Cl. G08b *13/00*
U.S. Cl. 340—258 A **12 Claims**

The burglar alarm system utilizes a transmitter that transmits an RF signal which is both amplitude modulated and frequency modulated. The signal is received by a receiver which is capable of sensing increases or decreases in the received energy due to movement through or into the energy



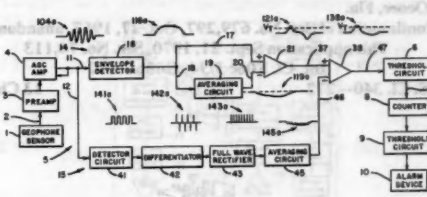
field which is generated and radiated by the transmitter. This change in energy level causes the receiver to trigger an alarm.

3,696,369

SIGNAL PROCESSOR

Marvin D. Laymon, Milpitas, Calif.; Jerome D. McCoy, Tulsa, Okla., and Millard F. Schewe, Sunnyvale, Calif., assignors to Sylvania Electric Products Inc.

Filed Dec. 2, 1970, Ser. No. 94,405
Int. Cl. G08b *13/00*
U.S. Cl. 340—258 D **26 Claims**



Seismic vibrations sensed by a geophone in a protected area are converted to an electrical seismic signal that is applied to an envelope detector. The detected signal is coupled directly and through an integrator which inverts the polarity thereof to a summing network. The zero crossings of the seismic signal are detected to generate a train of pulses that are integrated to produce a signal having an amplitude that is related to the fundamental frequency of the seismic signal and of the opposite polarity with respect to the detected signal and which is applied to the summing network. The output of the summing network is applied to a threshold circuit which produces an alarm indicating intrusion of the protected area when the magnitude of the sum signal exceeds a prescribed threshold level.

3,696,370

Patent Not Issued For This Number

3,696,371

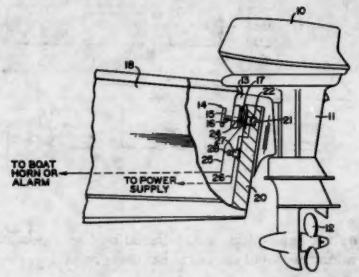
OUTBOARD MOTOR THEFT ALARM HAVING SWITCH ACTUATED BY MOTOR CLAMP

George G. Wise, 1207 Lakeshore Blvd., P.O. Box 798, Tavares, Fla.

Filed June 28, 1971, Ser. No. 155,849
Int. Cl. H04q *1/44*; G08b *7/00, 19/00*
U.S. Cl. 340—275 R **9 Claims**

An outboard motor theft alarm system having a switch placed in a transom of a boat which switch is activated by pressing and releasing an extended member. The switch is located directly in front of the outboard motor clamps which

depress the switch which switch is connected to an alarm system or to a transmitter transmitting to a receiver with an



alarm system so that when enabled, any attempt to loosen the outboard motor clamps will set off the alarm.

3,696,372

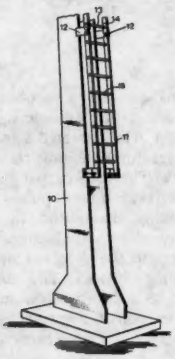
LADDER WARNING DEVICE

Leo Lawrence Garrett, deceased, Orlando, Fla.; The Florida National Bank at Orlando, administrator, P.O. Box 3593, Orlando, Fla., and Walter L. Birdyshaw, Box 301 Bay St., Ocoee, Fla.

Continuation of Ser. No. 679,297, Oct. 27, 1967, abandoned. This application Sept. 21, 1970, Ser. No. 74,113

Int. Cl. E06c *5/34*; **G08b** *13/02*

U.S. Cl. 340—272 **13 Claims**



A warning device involving a rigid section of ladder is pivotally suspended from a tank, tower, building or the like and adapted to move slightly upon an intruder placing weight upon the section of ladder. Means are provided for biasing the ladder section in one direction, with the arrangement being such that upon an intruder placing weight upon the ladder, it overcomes this bias and actuates a warning device. The warning device may take the form of a switch which, when actuated, operates an alarm at a remote location, thus alerting a guard or the police of the trespass by the intruder. Significantly, all aspects of this device are inconspicuous, the motion of the ladder is slight, and the intruder in almost all instances will be unaware of the fact that his presence has been detected. Also, the arrangement resets itself automatically, and cannot be actuated by an accumulation of snow and ice.

3,696,373

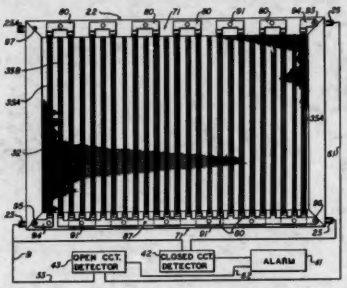
ELECTRIC ALARM SCREEN

John Malcolm Dunn, 305 Via Montego, San Clemente, Calif., and George Kenneth Hornbrook, 633 Norumbega, Monrovia, Calif.

Filed Aug. 12, 1970, Ser. No. 63,127

Int. Cl. G08b *13/00*

U.S. Cl. 340—273 **11 Claims**



A screen with mesh wires of one extension of conductive material electrically separates from screen wires of the opposite extension which may be conductive or nonconductive, is held in a frame having side members each having troughs to receive and hold the wires or strands. Two sets of wire connectors in one trough and one set of wire connectors in an opposite trough establish runs spaced transversely to the conductive strands across the screen mesh. A connector from each set in a trough is next adjacent a connector from the other set. One continuous electrical path back and forth across the screen mesh is established, as are parallel discontinuous paths intermediate the spaced runs of the continuous path. Leads from the screen frame conventional join the connector sets into an alarm circuit including conventional open circuit and closed circuit detectors. The detectors are adapted to actuate an alarm—which may be audible, visual, or recording—when the screen is cut or shorted.

3,696,374

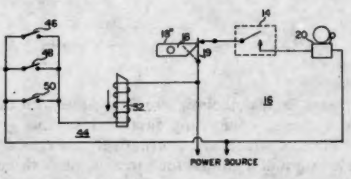
CABINET WITH JAM SWITCH AND ALARM SYSTEM

Joseph Vosbikian, Cheltenham, and James T. Vosbikian, Philadelphia, both of Pa., assignors to Hardware & Industrial Tool Co., Inc., Philadelphia, Pa.

Filed Sept. 25, 1970, Ser. No. 75,572

Int. Cl. G08b *13/06*

U.S. Cl. 340—274 **3 Claims**



An alarm system for use in protecting structures such as houses, apartments and the like, having movable access means such as doors and windows. A signal actuating means is movable between a preset position and a signal actuating position through a set position. The movement of the actuating means from the preset position to the set position and from the set position to the signal actuating position is timed through the action of a mechanical timer. A trigger means is provided for engaging and stopping the movement of the actuating means in the set position. A tripping means is connected to the trigger means and is associated with a detecting circuit. The opening of the access means controls the detecting circuit to

actuate the tripping means whereby the trigger means is moved out of engagement with the actuating means to permit the actuating means to continue its cycle from the set position to the signal actuating position. A signaling means, such as a bell, is energized when the actuating means reaches the signal actuating position to energize a signal control circuit. In a preferred embodiment of the invention, a self-contained, portable, low voltage power supply is utilized to drive both the detecting circuit and signal control circuit. In a second preferred embodiment of the invention, a high voltage alternating current source is utilized in conjunction with a step-down transformer to energize the detecting circuit and signal control circuit.

3,696,375

Patent Not Issued For This Number

3,696,376

Patent Not Issued For This Number

3,696,377

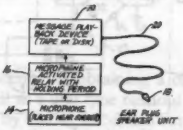
ANTISNORING DEVICE

Thomas P. Wall, 1551-30th West, Seattle, Wash.

Filed July 15, 1970, Ser. No. 55,011

Int. Cl. G08b *23/00*

U.S. Cl. 340—279 **4 Claims**


MESSAGE PLAY-BACK DEVICE (TAPE OR DISK)
MICROPHONE ACTIVATED RELAY WITH HOLDING PERIOD
MICROPHONE
EAR PLUG SPEAKER UNIT

Vocal sounds of a sleeper above predetermined level sensed by a transducer initiate operation of a record player device for delivery of audible antisnoring or equivalent instructions to the sleeper at a level below that sufficient to reactuate the record player device through the transducer means, and a holding means maintains the record player device operative for a predetermined period following initial actuation and thereupon terminates such operation preparatory to succeeding reactuation by the same means.

3,696,378

APPLIANCE THEFT ALARM USING VOLTAGE MAGNITUDE SWITCH

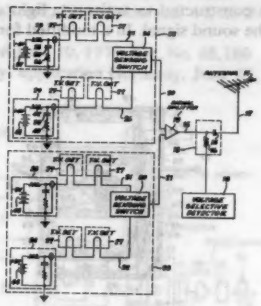
Kenneth D. Daniel, Palo Alto, Calif., assignor to Video Engineering, Inc., Sunnyvale, Calif.

Filed Aug. 11, 1970, Ser. No. 62,979

Int. Cl. G08b *13/00*

U.S. Cl. 340—280 **7 Claims**

A theft alarm system which operates in conjunction with a signal distribution system for protecting a plurality of devices. The devices receive a signal which is distributed from a central signal location by a plurality of coaxial cable distribution lines extending between the central signal location and termination points. A continuous loop of coaxial cable is threaded through each of the devices and spliced to the respective coaxial cable distribution line. A voltage is applied to each coaxial cable distribution line at its termination point. Voltage sensing switches adjacent the central signal location sense open-circuiting or



short-circuiting of any of the continuous coaxial cable loops and actuate a theft alarm.

3,696,379

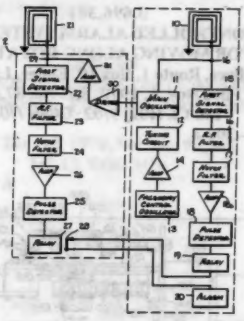
APPARATUS FOR ARTICLE THEFT DETECTION

Arthur J. Minasy, Woodbury, N.Y., assignor to Knogo Corporation, Westbury, N.Y.

Filed Dec. 2, 1970, Ser. No. 94,441

Int. Cl. G08b *21/00*

U.S. Cl. 340—280 **8 Claims**



In combination with article theft detection apparatus which employs a signal generator coupled to an antenna at a checkpoint and means for detecting and indicating the change in signal energy caused by the presence of a resonant circuit tuned to the signal frequency adjacent the antenna, a second antenna adjacent the checkpoint, a second detecting system connected thereto and means controlled by the second detecting system for disabling the indicating means when the energy change is due to spurious radiation, line voltage changes, etc., or due to the presence of such a resonant circuit at a different checkpoint to prevent false or ambiguous indications.

3,696,380

PORTABLE ALARM DEVICE

John D. Murphy, 22 East 22nd St., Bayonne, N.J.

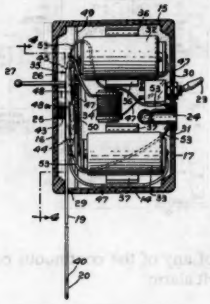
Filed June 25, 1971, Ser. No. 156,695

Int. Cl. G08b *21/00*

U.S. Cl. 340—283 **16 Claims**

A portable alarm device with a battery or low voltage operated sound signal triggered by a magnetic reed switch which is closed to complete the circuit by a magnet attached to a movably mounted arm, the poles of the magnet being positioned perpendicular to the longitudinal dimension of the contact strips of the reed switch to cause the reed switch to close when the magnet is in either of two positions relative to

the switch thereby permitting the device to be used with doors which open inwardly or outwardly, with sliding doors, in drawers or with windows on two sides of a room. The device may also be constructed to activate a light signal simultaneously with the sound signal. In a modified form of the device,



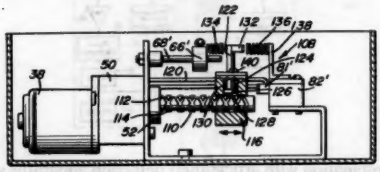
for use in the purse or in a pocket, the magnet is positioned with its poles parallel to the longitudinal dimension of the contact strips of the reed switch to cause the reed switch to close when the magnet is in one position over the center portion of the reed switch.

3,696,381

TIME CONTROLLED ALARM SYSTEM HAVING ACTUATOR MOVING ALONG ROTATING SHAFT

Archie C. Wallace, Route 1, Box 10, Elmer, La.

Filed Nov. 6, 1970, Ser. No. 87,430
Int. Cl. H02j *9/02*; **G08b** *1/00*
U.S. Cl. 340—309.4 **9 Claims**



An indicator system having an electrical timer which becomes actuated after a preselected interval for connecting a source of voltage to a motor. An extension of the motor shaft mounts an actuator that travels between the ends of the extension. After sensing actuator travel at one end, switching means cause the actuator member to reverse its direction to the second end of the extension. At one end of the extension an electrical switch closes a circuit between the voltage source and an electrically driven indicator. In operation, the indicator is caused to periodically issue an alert signal, the period between signals determined by the distance the actuator travels between extension ends.

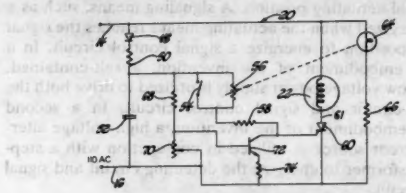
3,696,382

ALARM SYSTEM

Albert D. Rittmann, Kokomo, Ind., assignor to Functional Devices, Inc., Russiaville, Ind.

Filed Nov. 6, 1970, Ser. No. 87,453
Int. Cl. H04m *1/04*
U.S. Cl. 340—310 **2 Claims**

A smoke and heat alarm system employing a pulse-forming transmitter to produce a ringing perturbation in the household line voltage when actuated. This perturbation is sensed by a remote alarm device on the same line to produce a remote alarm. An optical smoke detector which is relatively insensi-



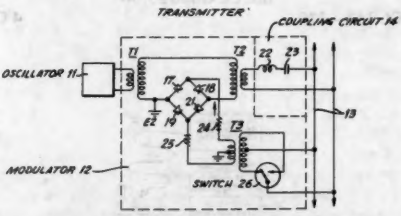
tive to line voltage variations is employed in the transmitter of the alarm system.

3,696,383

INFORMATION TRANSMISSION SYSTEM FOR METERED MAGNITUDES

Hiroshi Oishi; Fumio Aoki, both of Yokohama; Shigeru Kawano, Ibaraki; Hitoshi Muramatsu, Kawasaki, and Masahiro Saeki, Sagamihara, all of Japan, assignors to Tokyo Electric Power Company and Fujitsu Limited, Tokyo, Kawasaki, Japan

Filed Dec. 31, 1970, Ser. No. 103,221
Claims priority, application Japan, Jan. 17, 1970, 45/4517
Int. Cl. H04m *11/04*
U.S. Cl. 340—310 **2 Claims**



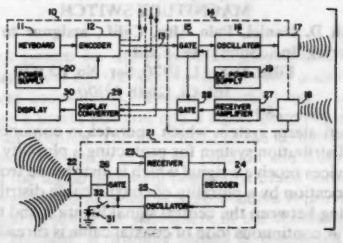
ON and OFF information signals are transmitted through an AC voltage distribution line via a single frequency carrier signal during a period of time in each cycle of the AC voltage when the information signal is in the ON condition and during another period of time in each such cycle when the information signal is in the OFF condition. A receiver receives the carrier signal from the distribution line synchronously with the AC voltage and determines the ON and OFF condition of the derived and received signal.

3,696,384

ULTRASONIC TRACKING AND LOCATING SYSTEM

Robert W. Lester, Manhasset, N.Y., assignor to Recognition Devices, Inc., New York, N.Y.

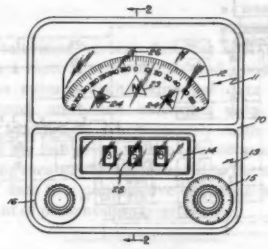
Filed July 8, 1971, Ser. No. 160,851
Int. Cl. G01s *3/80*; **G08b** *5/00*
U.S. Cl. 340—312 **21 Claims**



An ultrasonic tracking and locating system in which an identification code number is programmed on a console

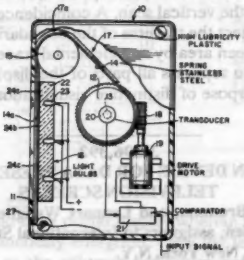
keyboard to activate an encoder which transmits a plurality of coded pulses to a plurality of transceiver units located in the rooms of a building where surveillance is desired. A transducer in the transceiver transmits a coded, ultrasonic digital signal which is dispersed throughout the room. Portable pocket unit transceivers carried by persons to be located receive the transmitted ultrasonic signals and decode the signals to determine if they correspond to the pocket unit's identification code. If the signal corresponds to the pre-programmed code, the pocket unit transmits a single ultrasonic pulse which is received by the room transceiver and is transmitted back to the console, where a display converter activates a digital readout display to provide a visual, numerical indication of the location of the person.

3,696,385
INDICATOR
Harold S. Burns, 38 Greengate Road, Falmouth, Mass.
Filed Nov. 3, 1970, Ser. No. 86,419
Int. Cl. G09f 9/00
U.S. Cl. 340—316 **2 Claims**



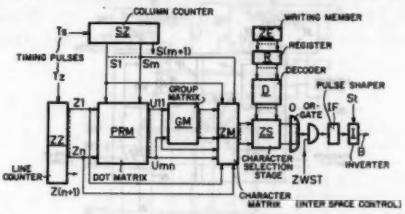
A composite indicator for obtaining a digital or alpha numeric readout as well as a dial type readout with provision for adjusting the output by dialing in certain corrections.

3,696,386
THERMOMETER-TYPE INDICATOR
John Gear, Huntington, N.Y., assignor to Atlantic Scientific Corporation, Plainview, N.Y.
Filed June 25, 1970, Ser. No. 49,812
Int. Cl. G08b 5/00
U.S. Cl. 340—317 **7 Claims**



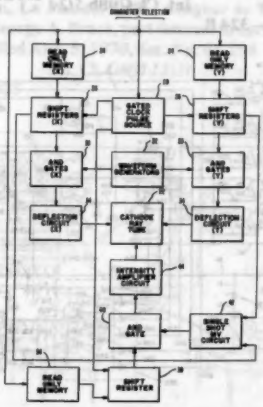
A thermometer-type indicator is described wherein a flexible, thin, self-supporting tape is caused to move in a housing such that its leading edge forms a thermometer-like representation of an electrical input signal in a viewing window in the housing.

3,696,387
CIRCUIT ARRANGEMENT FOR CONTROLLING CATHODE-RAY TUBES FOR THE DISPLAY OF ALPHA-NUMERICAL CHARACTERS
Hans-Georg Nussbaum, Bismarckstrasse 44, 28 Bremen, Germany
Filed June 10, 1970, Ser. No. 45,180
Claims priority, application Germany, June 25, 1969, P 19 32 113.2
Int. Cl. G06f 3/14
U.S. Cl. 340—324 A **1 Claim**



The specification discloses a device for generating characters on a raster type display wherein line and column signals from the display are converted into a plurality of sequential pulses on separate lines corresponding to the points of a matrix to be displayed. These generated signals are then converted into group signals corresponding to portions of different characters having a common shape. The group signals corresponding to portions of characters are combined to form entire characters and under the control of stored character information selected for display.

3,696,388
APPARATUS FOR GENERATING CHARACTERS
William E. Eichelberger, 4700 Glen Forest Drive, Raleigh, N.C.
Filed Dec. 18, 1970, Ser. No. 99,342
Int. Cl. G06f 3/14
U.S. Cl. 340—324 A **7 Claims**



Characters are displayed on the screen of a cathode ray tube. The cathode ray tube electron beam is deflected in a trace representing the character to be displayed by sequentially applying various waveforms to the cathode ray tube deflection circuit. Digital control circuitry including a read only memory having segment deflection commands for each character to be displayed, shift registers set by the deflection commands, and AND gates enabled by the shift registers control the sequential application of the various waveforms to the deflection circuit. An additional shift register set by the deflection commands of the read only memory, a single shot

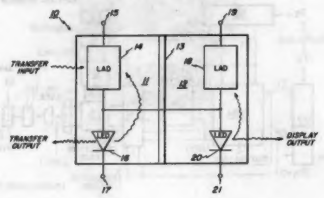
multivibrator, and an associated AND gate control the intensity of the electron beam during the trace.

3,696,389

DISPLAY SYSTEM UTILIZING LIGHT EMITTING DEVICES

Gunther E. Fenner, Schenectady, N.Y., assignor to General Electric Company

Filed July 20, 1970, Ser. No. 56,297
Int. Cl. H03k *19/14*; G02f *3/00*
U.S. Cl. 340—324 R **14 Claims**



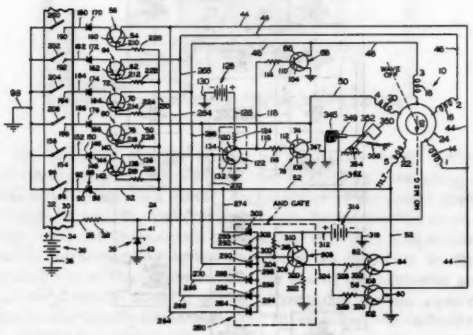
Methods and apparatus for receiving, transferring, retaining and displaying information within a display system having inherent internal memory capabilities. Transfer and display elements including light-emitting and light-activated devices are employed in numerous configurations to provide display systems of high density with a minimum number of connections to external control circuitry with self-sustaining memory capabilities. Row-by-row, column-by-column and time sequential addressing of both rows and columns of display elements are disclosed.

3,696,390

DIGITAL MAGNETIC WHEEL LOGIC CONTROL NETWORK

Richard L. Cohen, Old Bridge, N.J., assignor to The Bendix Corporation

Filed Oct. 19, 1970, Ser. No. 81,986
Int. Cl. G08b *5/24*
U.S. Cl. 340—324 R **10 Claims**



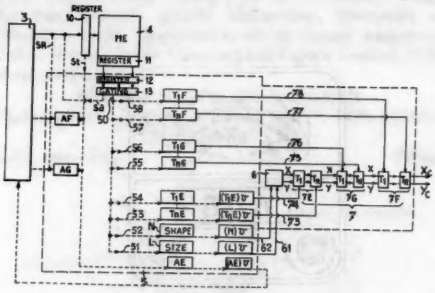
A digital magnetic wheel logic control network for providing selective visual displays wherein the control network has a plurality of inputs, each of which is associated with a particular indicator display. Selective control of any of the inputs will energize one or more of a plurality of control coils of an electromagnetic indicator display cooperatively arranged in relation to a rotary magnet to angularly position the same and thereby provide for a selected indication and including an intermediary network controlled by one of the selective input controls and so arranged in the control network as to dominate the other of the selective input controls so that upon operation of the one input control the rotary magnet is angularly actuated in the electromagnetic indicator display to a position indicative of a failure in a command condition irrespective of any selective control of the other inputs. Further intermediary networks are located between the plurality of inputs and the control coils, each of these other intermediary networks including a plurality of solid-state control elements for selectively controlling energization of different pairs of the control coils to provide selective indications.

3,696,391

SYSTEM FOR THE DISPLAY OF SYNTHESIZED GRAPHIC SYMBOLS

Georges Peronneau, La Celle Saint Cloud, France, assignor to Thomson-CSF Visualisation Et Traitement Des Informations (T-V.T.), Paris, France

Filed Sept. 16, 1970, Ser. No. 72,770
Claims priority, application France, Sept. 19, 1969, 6931945; Sept. 19, 1969, 6931946
Int. Cl. G06f *3/14*
U.S. Cl. 340—324 A **15 Claims**



A variety of graphic symbols, to be displayed on the screen of a cathode-ray tube under the control of a computer, are synthesized from a store of basic elements which can be selectively combined into groups, the latter in turn being assembled into figures. Digital instructions regarding the nature, size, orientation and location of any selected configuration in each of these three denominations (element, group, figure) are transmitted by the computer, via a memory containing the necessary data, to an analog processor which includes a function generator and several function modifiers in the sweep circuit of the cathode-ray tube to project successively the several elements defining a group, the several groups forming a figure, and the several figures constituting the display, with individual treatment of each higher-order configuration as to overall positioning and size. A function generator capable of producing different conic sections includes two cross-connected integrating amplifiers in the signal paths for the control of the horizontal and the vertical scan. A coincidence circuit may be activated to detect the traverse of the boundaries of a selected rectangular screen area by any elemental trace for instructing the computer to suppress all parts of the display outside that area for the purpose of distinctive visualization of the framed portion.

3,696,392

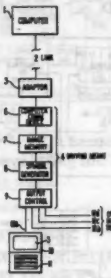
CONVERSION DEVICE FOR DATA PRESENTATION ON TELEVISION SCREENS

Lars Fossum, Bromma, and Lennart Wangberg, Jakobsberg, both of Sweden, assignors to International Standard Electric Corporation, New York, N.Y.

Continuation of Ser. No. 779,930, Nov. 29, 1968, abandoned.
This application April 29, 1971, Ser. No. 138,841
Claims priority, application Sweden, Dec. 6, 1967, 16737/67
Int. Cl. G06f *3/14*
U.S. Cl. 340—324 A **6 Claims**

An arrangement is provided for presentation of data received from a computer on a plurality of television screens.

The arrangement includes a memory mans for storing in a delay line the coupled data which is circulated for representation on all of said television screens; and a number of row memories, one for each of the television screens, is coupled to the memory means and has a shift register in which the row data contents are circulated in an individual closed data loop a given number of times depending on the row resolution factor of the television image for line representation on a corresponding television screen. Another shift register is controlled from a central control unit and coupled to the row memories to extract each individual data row from the memory means, and each individual data row in a row memory is circulated synchronously with the repetition frequency of the line sweep of the television screen. The output generating means which is coupled to the screens presents each row of data in a consecutive sequence with a predetermined amount of presentation overlapping.

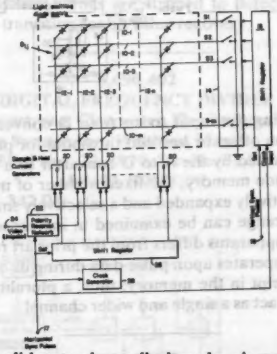


3,696,393

ANALOG DISPLAY USING LIGHT EMITTING DIODES

Thomas W. McDonald, Dana Point, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed May 10, 1971, Ser. No. 141,890
Int. Cl. G08b 5/36
U.S. Cl. 340—324 R **5 Claims**



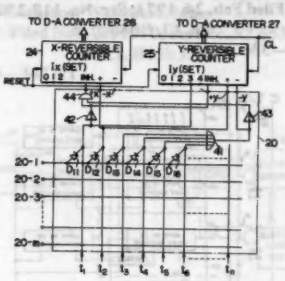
A scanned solid state planar display wherein two successive rows are simultaneously energized. Only the latest row energized is written as the columns are driven because the light emitting elements are polarized the same in alternate rows and are oppositely polarized for each suceeding row, and the column generators reverse their driving current polarity for each suceeding row. Interlaced scanning is provided in one embodiment of the invention. Light emitting diodes are used as the display elements. Other light sources with series rectifiers are optionally used.

3,696,394

METHOD AND ARRANGEMENT FOR GENERATING TRACING SIGNALS

Toshio Kashio, Tokyo, Japan, assignor to Casio Computer Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 4, 1969, Ser. No. 882,057
Claims priority, application Japan, Dec. 11, 1968, 43/90203
Int. Cl. G06f 3/14
U.S. Cl. 340—324 A **4 Claims**



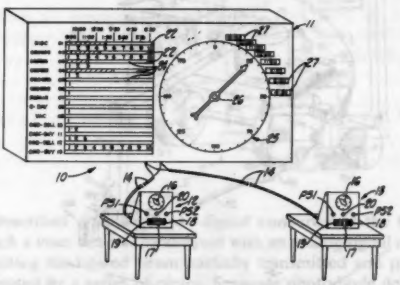
Tracing signals are applied to control the vertical and horizontal deflecting electrodes for a display or recording device to reproduce two-dimentional characters or indicia. In order to generate such tracing signals, the arrangement is provided with a memory which stores the programs which comprise two kinds of information, one being for setting the counters and the other being for counting input pulses up or down by the counters connected to the memory. The stepwise output of each of the counters is converted by the digital-to-analog converters into analog quantities to generate tracing or control voltages to be applied to the deflecting electrodes of the display or recording device.

3,696,395

MANUALLY CONTROLLED AUTOMATIC INFORMATION DISPLAY DEVICE

Norman Barron, La Puente, Calif., assignor to Wm. Douglas Sellers and George A. Brace, part interest to each

Filed Aug. 5, 1970, Ser. No. 61,290
Int. Cl. G09f 11/16
U.S. Cl. 340—325 **40 Claims**



An information display device having a wide variety of uses in recording and displaying graphically separate multiple channels of related types of information for visual analysis and comparison by one or more persons. One of the many typical uses is to record and keep abreast of the progress of assignments to each of a group of technicians charged with making emergency repair runs to various parts of a complex system, such as a utility system. The control operator is advised of the essential information required to monitor each job assignment and receives periodic progress reports. The apparatus control console is then operated to update a particular display board indicator for that workman to show the status of his particular

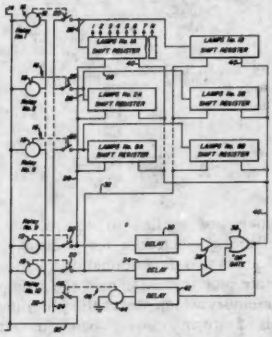
assignments as well as to update totalizer mechanism. More than one control console can be connected in tandem to operate the same display board from different parts of a large room.

3,696,396

SHIFTING DATA DISPLAY

Eugene S. Ceschini, Tarentum, Pa., assignor to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Feb. 24, 1971, Ser. No. 118,230
Int. Cl. G08b 5/36
U.S. Cl. 340—336 7 Claims



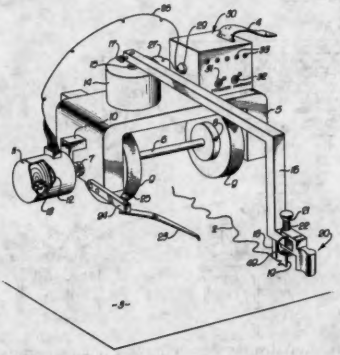
A moving data display, especially suited to be an output device for a computer, utilizing an array of segmented display lamps. The circuit includes a plurality of shift registers equal in number to the number of segments in each lamp, with each shift register having a number of stages equal to the number of lamps.

3,696,397

GRAPH-READING DIGITAL CONVERTER

William H. Raser, 6451 W. 83rd St., Los Angeles, Calif.

Filed March 16, 1970, Ser. No. 19,712
Int. Cl. G01c 7/04; G08c 9/00; H03k 13/02
U.S. Cl. 340—347 AD 13 Claims



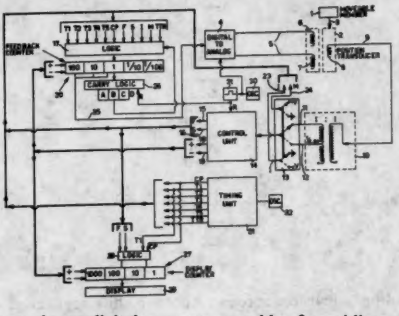
An analog-to-digital data conversion system for digitizing points and lines appearing on graphs and charts. A portable instrument rolls freely over any marked surface, is directed to a succession of points, and records coordinates on tape for computer usage. Any such usage generally requires a tape reading program involving several steps or subprograms. If a relatively simple trigonometric coordinate transformation subprogram is added to this program, the tracing instrument can be kept simple and inexpensive by operating in semi-polar rather than in the final rectangular coordinates.

3,696,398

ANALOG TO DIGITAL CONVERTERS HAVING MULTIPLE UNITS OF MEASUREMENT

Piero Pomella, Ivrea; Elia Baratto, Banchette, and Luciano Lauro, Ivrea, all of Italy, assignors to Ing. C. Olivetti & S.p.A., Ivrea (Torino), Italy

Filed June 18, 1970, Ser. No. 47,320
Claims priority, application Italy, June 23, 1969, 52343 A/69
Int. Cl. G06f 7/38; H03k 13/02; H04l 3/00
U.S. Cl. 340—347 AD 8 Claims



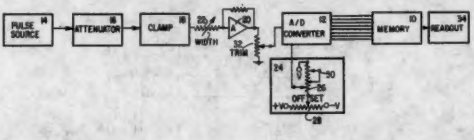
An analog to digital converter capable of providing a digital indication of the analog signal in any of a number of digital units (e.g., inches or meters) and having coarse-fine measuring ability is disclosed. A feedback counter, which operates either in a fast or slow mode depending on the magnitude of the error signal, operates in a single unit system while a display counter operates in alternative unit systems.

3,696,399

RANGE EXPANSION METHOD AND APPARATUS FOR MULTICHANNEL PULSE ANALYSIS

Robert T. Klein, Hialeah, and Robert L. Kreiselman, Miami, both of Fla., assignors to Coulter Electronics, Inc., Hialeah, Fla.

Filed Sept. 11, 1970, Ser. No. 71,441
Int. Cl. H03k 13/02
U.S. Cl. 340—347 AD 35 Claims



By expanding the input to an A to D converter, and also establishing an offset or low end threshold for pulse data as it is being processed by the A to D converter to a multichannel pulse amplitude memory, the fixed number of memory channels are effectively expanded and a selectively small portion of the channel range can be examined in increased detail. This method and apparatus differs from the prior art range expanding in that it operates upon pulse data during its collection and not after receipt in the memory; thus, a plurality of memory channels can act as a single and wider channel.

3,696,400

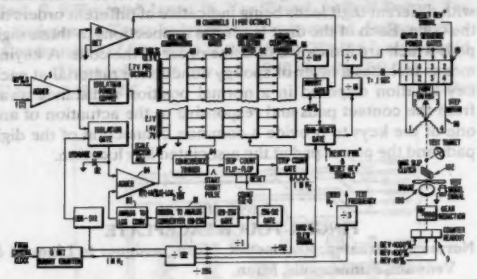
ANALOG-TO-DIGITAL CONVERTER

Walter T. Lang, Jackson Heights, N.Y., assignor to Simmonds Precision Products, Inc., Tarrytown, N.Y.

Division of Ser. No. 791,897, Jan. 17, 1969, Pat. No. 3,593,012. This application Oct. 6, 1970, Ser. No. 78,482
Int. Cl. H03k 13/17
U.S. Cl. 340—347 AD 6 Claims

An analog-to-digital converter adapted for use in a recording system for measuring and indicating engine life usage and

providing analog data representative of engine temperature and engine rpm, the summing analog data and converting the



information into serial digital form to antilog to the base 2, integrating by counting and displaying the total count as an indication of percent engine life used.

3,696,401

DIGITAL DATA DECODER WITH DATA RATE RECOVERY

James T. Vance, Hawthorne, Calif., assignor to General Instrument Corporation, Hawthorne, Calif.

Filed Oct. 9, 1970, Ser. No. 79,558

Int. Cl. H04l *3/00*

U.S. Cl. 340—347 DD **6 Claims**

A decoder circuit is disclosed for decoding digital signals having frame end transitions, for example, on bits of value "1" and mid-frame transitions for the second one of two sequential "0's" and for each "0" thereafter. Sequential transitions alternatingly trigger two oscillators of similar frequency which is at least twice the bit rate frequency. The oscillations overlap to ensure phase coherency. The oscillator outputs are combined and counted down to the bit rate frequency for bit rate recovery. The frame ends are strobed to detect absence or presence of a transition for bit value recovery.

3,696,402

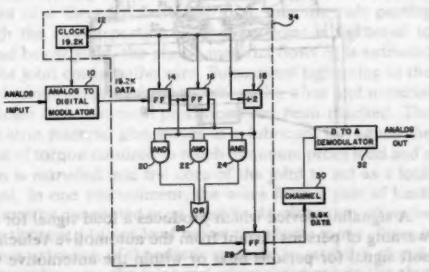
DIGITAL FREQUENCY DIVIDER

Thomas R. Armstrong, Clearwater, Fla., assignor to Honeywell Information Systems Inc., Waltham, Mass.

Filed Nov. 23, 1970, Ser. No. 91,627

Int. Cl. H04l *3/00*

U.S. Cl. 340—347 DD **7 Claims**



Digital pulse rates are divided by storing sequential bit groups, each of which has a number of bits equal to the factor by which the rate is to be divided, and generating an output pulse for each group. Each output pulse is equal to the majority binary value in that group. Where each group has an even number of bits, a toggle is used to establish the output value for groups where no majority value exists.

3,696,403

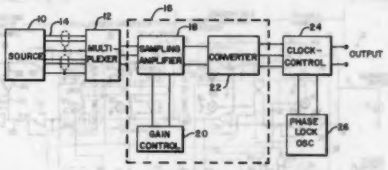
LOW LEVEL CONVERSION SYSTEM

James V. DiRocco, Winchester, Mass., assignor to Gordon Engineering Company, Wakefield, Mass.

Filed Nov. 25, 1970, Ser. No. 92,653

Int. Cl. H03k *13/00*

U.S. Cl. 340—347 NT **11 Claims**



Multiplexed analog signals are applied to the input of a sampling amplifier having a digitally controlled gain. The signals at the output of the sampling amplifier are applied to an analog to digital integrating converter. A phase lock oscillator is connected to a clock which controls the operation of the converter in such a manner that the integration time of the converter is equal to one or more cycles of the power line frequency, whereby maximum common mode rejection occurs at the power line frequency.

3,696,404

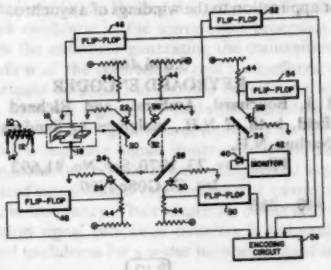
ANALOG-TO-DIGITAL CONVERTER

Gideon R. Brainerd, 416 Ben Oaks Drive, Severna Park, Md.

Filed March 27, 1969, Ser. No. 811,008

Int. Cl. G08c *9/00*

U.S. Cl. 340—347 AD **7 Claims**



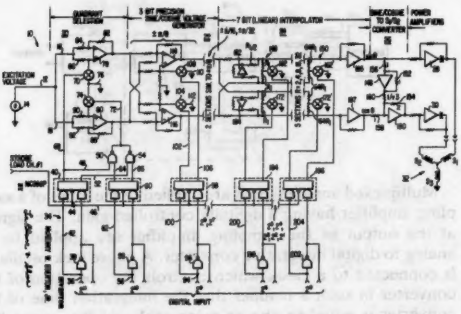
Described is an analog-to-digital converter of the type in which a laser beam is modulated with an analog signal and the resulting modulated beam partially transmitted and partially reflected by a series of plates. Separate photodiode detectors are positioned behind each plate to sense the transmitted light and furnish digital inputs to suitable encoding circuitry. As the intensity of the beam increases due to an increase in the analog value of the input signal, greater numbers of the diode detectors are triggered to reflect an increase in the digital value also.

3,696,405

Patent Not Issued For This Number

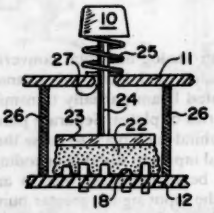
3,696,406
Patent Not Issued For This Number

3,696,407
DIGITAL TO SYNCHRO CONVERTER
McKenny W. Egerton, Jr., Owings Mills, Md., assignor to The Bendix Corporation, Southfield, Mich.
Filed Aug. 21, 1969, Ser. No. 851,794
Int. Cl. H03k 13/02
U.S. Cl. 340—347 SY 16 Claims



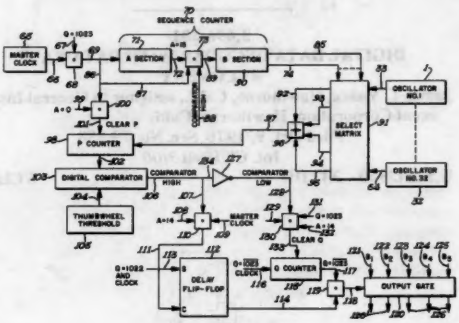
Disclosed is a D to S converter for converting a binary input digital code to an analog output suitable for driving a synchro or resolver. The encoder comprises a plurality of electronic angle vector rotators including cross coupled sine and cosine channels for modifying the input to each stage by an amount equal to plus or minus a known angle. Each stage produces rotation by half the angle of the previous stage. The converter includes a first stage forming a quadrant selector and angle rotation for bits of lesser significance are approximated by a resistance ladder linear interpolator. The output drives a resolver directly or passes through a Scott transformation stage for application to the windings of a synchro.

3,696,408
KEYBOARD ENCODER
Richard J. Bouchard, Amherst, and Richard C. Belden, Litchfield, both of N.H., assignors to Sanders Associates, Inc., Nashua, N.H.
Filed Nov. 23, 1970, Ser. No. 91,692
Int. Cl. G08c 1/00
U.S. Cl. 340—365 7 Claims



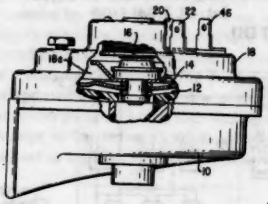
Keyboard encoding apparatus having a plurality of keys with different codes of an N digit binary code assigned to each key. A plurality of groups of contact pads are secured to a sheet of electrically non-conductive material at different key locations which are in registration with the keys. Each group of pads includes at least one power pad and a number of digit pads equal to the number of binary 1's in the associated code. A power lead is secured to the sheet and has connections to all of the power pads. N digit leads are also secured to the sheet with different digit leads being indicative of different orders of the code. Each of the digit leads has connections to those digit pads which are indicative of a like order of the code. A keying means includes a layer of spongy conductive material at each key location disposed in a normal position a distance away from the contact pads and responsive to the actuation of any one of the keys to provide a common connection of the digit pads and the power pad at the associated key location.

3,696,409
FINGER-TOUCH FACEPLATE
Norman J. Braaten, Rosemount, Minn., assignor to Linquist & Vennum, Minneapolis, Minn.
Filed Dec. 28, 1970, Ser. No. 101,752
Int. Cl. G08c 9/02
U.S. Cl. 340—365 6 Claims



A system for identifying a particular position on the face of a display device by simply touching the area with the finger. The area is a conductive pad connected to a relaxation oscillator whose frequency is lowered by the touch. The oscillator is therefore identifiable and a digital computer is enabled to perform a prescribed act such as new information transferred to the display device, dependent upon the location of the area touched.

3,696,410
HORN WITH BUZZER
William C. Wetzel, 260 State Park Drive, and Raymond W. Long, 1017 Taylor St., both of Bay City, Mich.
Filed Feb. 17, 1971, Ser. No. 116,189
Int. Cl. G10k 9/00
U.S. Cl. 340—393 4 Claims



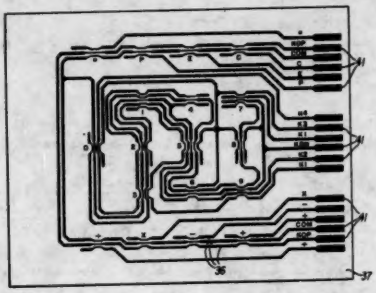
A signaling device which produces a loud signal for distant warning of persons distant from the automotive vehicle and a soft signal for persons near or within the automotive vehicle under controlled conditions. The loud signal is under the control of the driver with the soft signal being under control of selected safety functions.

3,696,411

KEYBOARD ENCODER

Jack S. Kilby, and James H. Van Tassel, both of Dallas, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 671,805, Sept. 29, 1967, abandoned.
This application Nov. 12, 1970, Ser. No. 89,016
U.S. Cl. 340—365 7 Claims



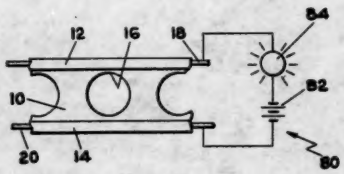
Disclosed is a keyboard encoder capable of directly encoding decimal input information into electrical binary code. The electrical encoding of the information appears at the output terminals of the encoder when the key representing the information to be encoded is depressed. The depressed key causes the selective shorting together of certain ones of a group of encoding conductors which are connected to the output terminals.

3,696,412

METHOD AND MEANS FOR INDICATING TENSION

Roger I. Swanson, Butler, Pa., assignor to Dake Corporation, Grand Haven, Mich.

Filed Oct. 19, 1970, Ser. No. 81,819
Int. Cl. G08b 21/00
U.S. Cl. 340—421 44 Claims



In a method and means for indicating tension on bolts, screws and the like, a plastic member of flowable material having a plurality of relatively thin copper wires embedded along each edge is utilized. The member has an annular cutout portion permitting it to be inserted between any two bearing surfaces of a threaded fastening joint with the bolt passing through the cutout portion. When the point is tightened to pre-load below yield, the plastic material flows or is extruded until the joint contacts the wire. Subsequent tightening to the desired minimum proof load will shear the wires and material to indicate that minimum proof load has been reached. The plastic strip material also serves as a lubricant to reduce the amount of torque required to reach minimum proof load and a portion is extruded into the core of the joint to act as a lock and seal. In one embodiment, the wires form a pair of leads which may be connected in an electric circuit so that when the joint is tightened to pre-load below the plastic range, there is sufficient extrusion of the plastic material to establish electrical contact between the joint and edge wires to close the electrical circuit, activating an electrical signal to indicate that pre-load has been reached.

3,696,413

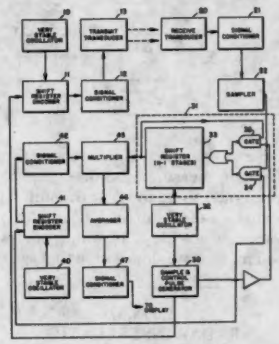
Patent Not Issued For This Number

3,696,414

CORRELATORS HAVING A TIME COMPRESSED ANALOGUE REFERENCE

Willard B. Allen; Charles E. Persons, and Marshall K. Brandon, all of San Diego, Calif., assignors to The United States of America as represented by the Secretary of the Navy

Filed April 6, 1971, Ser. No. 131,623
Int. Cl. G06f 7/04
U.S. Cl. 343—5 R 6 Claims



A separate reference generator, operated from an independent clock oscillator, is selectively controllable to generate different time-compressed reference signals for comparison to received signals during each recirculation of a time compressor circuit. Since the selectively variable reference signal is an analogue signal, the output of a correlation processor is linearly related to a correlation coefficient existing between the reference signal and the received signal, for signals with Gaussian characteristics. Having the reference signal derived from a clock oscillator in the correlation processor, that is distinct from the oscillator generating the transmitted signal, allows variation of the reference signal's waveform, particularly with respect to phase, to provide correlation with doppler-shifted received signals. A real-time correlation signal processor, utilizing a single time compressor in the receive channel, and a separate signal generator in the reference channel cooperate to correlate time-compressed replicas of the transmitted signal with a reference signal having substantially the same frequency. The complexity of the real-time active correlation signal processor circuitry is reduced and its flexibility and usefulness for a wider number of applications is increased.

3,696,415

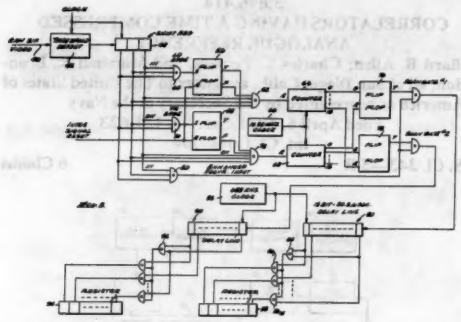
ADAPTIVE PULSE QUANTIZER SYSTEM

Jack R. Ballantyne, Santa Ana, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

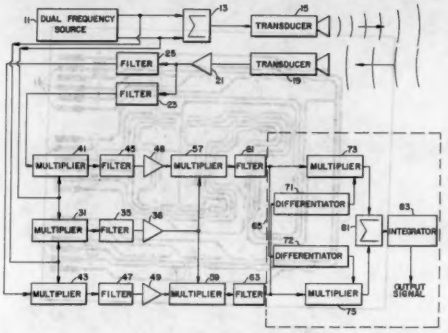
Filed May 21, 1970, Ser. No. 39,189
Int. Cl. G01s 9/56, 7/28
U.S. Cl. 343—6.5 LC 6 Claims

A pulse quantizer system particularly suitable for use in secondary surveillance radar applications for discriminating between reply pulses which occur in near time coincidence. In such applications, an interrogation signal is periodically transmitted at a selected sweep rate from a fixed antenna station and detected by transponders carried by aircraft, for example, within the antenna range. The transponders in turn transmit a coded reply back to the antenna station. The coded replies are normally comprised of 13 data bits serially provided between

first and second framing bits spaced by a precise interval, usually 20.3 microseconds. Each data bit is represented by the occurrence or non-occurrence of a pulse within a corresponding bit time slot of the 20.3 microsecond interval. The disclosed pulse quantizer system facilitates discrimination between replies from two or more transponders where the pulses thereof occur in near time coincidence. After each interrogation, the system measures the time duration of the first reply pulse (presumed to be the first framing bit) and for the remainder of that sweep interval, accepts or rejects pulses based on whether or not they fall within corresponding portions of subsequent bit time slots within that sweep interval.



response to a radiated signal comprising a pair of adjacent frequency components are modified according to a preselected time-amplitude function and are cross-combined so as to generate an output signal whose amplitude varies as a function of the net displacement of a target within the environment. Further, the output signal is relatively insensitive to moving clutter which does not undergo a substantial net displacement.

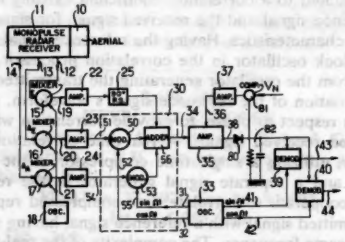


3,696,416

RADAR INSTALLATION

Jacques Badiano, Chatenay-Malabry, and Henri Commissaire, Ermont, both of France, assignors to Electronique Marcel Dassault, Paris, France

Filed April 27, 1970, Ser. No. 32,003
Int. Cl. G01s 9/22
U.S. Cl. 343—7.4 **9 Claims**



A radar installation is provided in which the receiving aerial for the echoes is of the type used in monopulse radar, but in which the processing circuitry for delivering the required final information is of the character utilized in an electromechanical scanning system. The echoes picked up by the aerial are thus subjected to some of the conventional processing in monopulse systems and the three signals resulting from this partial processing are transformed into a single signal of the type delivered by an aerial of an electromechanical scanning radar.

3,696,417

SIGNAL PROCESSOR

Norman E. Pedersen, Wilmington, Mass., assignor to Panametrics, Inc., Waltham, Mass.

Filed July 2, 1970, Ser. No. 51,845
Int. Cl. G01s 9/42
U.S. Cl. 343—7.7 **6 Claims**

In the signal processor disclosed herein, the respective sets of echo signals reflected back from an environment in

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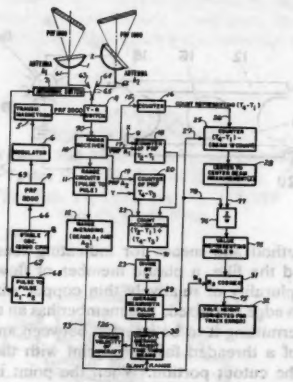
3,696,418

ALTITUDE MEASURING SYSTEM

George B. Litchford, Northport, N.Y., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Filed Sept. 14, 1970, Ser. No. 72,024
Int. Cl. G01s 9/04
U.S. Cl. 343—11 R **4 Claims**



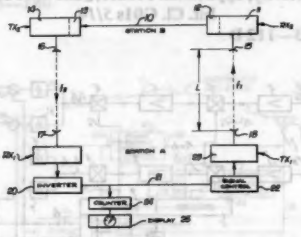
A surface based altitude measuring system for accurately measuring the altitude of an airborne vehicle consisting in part of two antennas for producing narrow fan beams which intersect in space, so that the altitude of an aircraft which flies through the two beams can be accurately determined. The radar echo which returns from the aircraft determines the slant range of the aircraft from the antennas, and the time interval between the interceptions of the two beams by the aircraft is related to the elevation angle. The true height of the aircraft above the antennas is determined from the above measurements, with compensation for flight paths not directly above the facility.

3,696,419

ELECTRONIC RANGING APPARATUS WITH TRANSMITTER-RECEIVER CYCLING

Joseph W. Crownover, 6651 Avenida Mirola; John I. Wilhelm, 5962 Avenida Chamnez, both of La Jolla, Calif., and Ray E. Thompson, 5351 Westknoll Lane, San Diego, Calif.

Filed May 4, 1970, Ser. No. 34,358
Int. Cl. G01s 9/06
U.S. Cl. 343—13 R 7 Claims



The invention concerns ranging apparatus employing a closed radio circuit established between spaced stations and characterized by generating a frequency that is a function of the distance between the stations, to determine that distance.

3,696,420

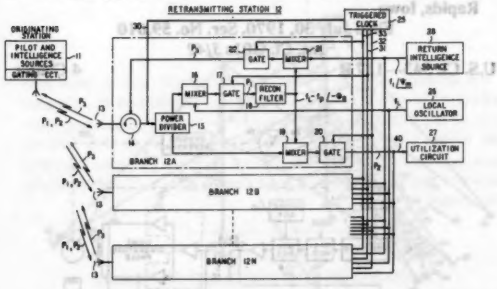
Patent Not Issued For This Number

3,696,421

SPACE DIVERSITY PHASED ARRAY RETRANSMISSION SYSTEM USING TIME DIVISION

Jesse S. Bitler, Howell Township, Monmouth County, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed June 6, 1969, Ser. No. 831,132
Int. Cl. G01s 9/56
U.S. Cl. 343—100 TD 10 Claims



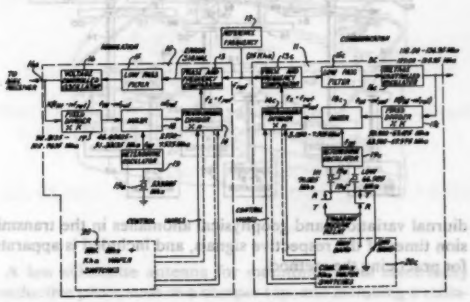
An adaptive retransmission station operates at a single reception and transmission frequency by use of time division while full duplex operation is provided by appropriate sampling. This scheme is especially well suited to mobile radio systems operating at microwave frequencies in populated areas. A timing sequence is established with three individual time slots for transmission of samples of a phase reference signal from base to remote, an intelligence bearing signal from base to remote, and a generated return intelligence bearing signal from remote to base. Time dedicated to transit delay is provided after transmission of the intelligence signals from both the base and remote stations.

3,696,422

NAVIGATION RECEIVER/COMMUNICATIONS TRANSCEIVER AND FREQUENCY SYNTHESIZER ASSOCIATED THEREWITH

Gary L. Burrell, Overland Park, Kans., assignor to King Radio Corporation, Olathe, Kans.

Filed Feb. 27, 1970, Ser. No. 15,061
Int. Cl. H04b 7/00
U.S. Cl. 343—100 8 Claims



The subject NAV/COM unit incorporates a multi-channel navigation receiver with a multi-channel communications transceiver and associated audio system. The NAV/COM unit utilizes analog, digital and heterodyne techniques in a unique combination to accomplish frequency synthesis in simplex transceivers. A stabilized master oscillator (SMO) provides frequency generation. A feedback loop is used to slave a voltage controlled oscillator (VCO) frequency to an exact multiple of a crystal controlled reference oscillator frequency. The VCO output frequency is divided by two, mixed with a signal from a high frequency crystal oscillator, divided by *n*, and compared in frequency and phase with a low frequency crystal oscillator signal. The filtered error signal provides bias to the VCO in such a manner that when the VCO frequency is low, the error signal is a high voltage, and when the VCO frequency is above the desired frequency, the error signal is a low voltage. This error signal drives the VCO towards the selected frequency. When the VCO gets within a certain range of the desired frequency, the loop captures the VCO and pulls it into phase lock. In this condition, the loop establishes an error signal that is essentially a square wave with a frequency equal to that of the reference oscillator. A low pass filter recovers the DC component of the square wave and biases the VCO to maintain the selected frequency output. The square wave duty factor and thus the filtered DC/VCO bias voltage, varies accordingly with selected VCO frequency.

The communications section utilizes a two crystal heterodyne oscillator in its associated SMO for two band frequency synthesis.

3,696,423

Patent Not Issued For This Number

3,696,424

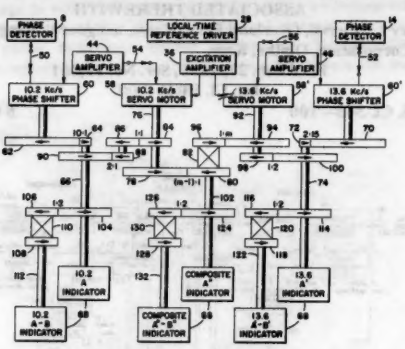
METHOD AND APPARATUS FOR VERY-LOW-FREQUENCY RADIO NAGIGATION

John A. Pierce, Arlington, Mass., assignor to LTV Electrosystems, Inc., Dallas, Tex.

Filed Dec. 23, 1968, Ser. No. 785,925
Int. Cl. G01s 1/36
U.S. Cl. 343—105 R 13 Claims

Disclosed is a method and apparatus for improving the accuracy of navigation by the Omega Navigation System. The improvement in the method of navigating by the Omega system relates to the detection of the phase of each of at least two very-low frequency signals and the generation therefrom of a composite signal which bears a predetermined relation-

ship to the detected signals and the predetermined relationship is selected to reduce the positioning error attributable to



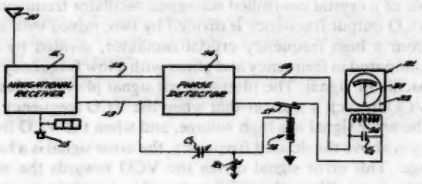
diurnal variations and geophysical anomalies in the transmission times of the respective signals, and included is apparatus for practicing the method.

3,696,425

NAVIGATION SYSTEM FOR IMPROVING NOISY SIGNALS

Earl Stuart Perkins, Oak Brook, Ill., assignor to Butler National Corporation, Oak Brook, Ill.

Filed April 30, 1970, Ser. No. 33,232
Int. Cl. G01s 1/08
U.S. Cl. 343—107 **5 Claims**



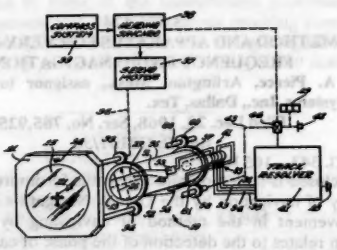
A navigation system which includes monitoring means for continuously monitoring the navigation signal such that if an intelligent signal varies at an inordinately high rate the rapidly fluctuating signals are not fed to the output of the system but the output continues to indicate the prior output until such time that the inordinately rapid rate signals disappear.

3,696,426

RECTILINEAR NAVIGATION SYSTEM

Earl Stuart Perkins, Oak Brook, Ill., assignor to Butler National Corporation, Oak Brook, Ill.

Filed April 30, 1970, Ser. No. 33,233
Int. Cl. G01s 1/08
U.S. Cl. 343—107 **10 Claims**



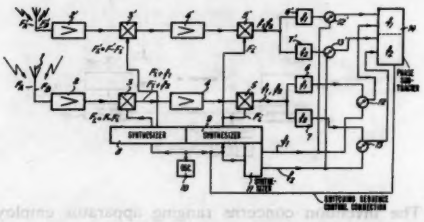
An aircraft navigation system which has a rectilinear navigation director with a fixed aircraft indicia and which continuously indicates the heading of the aircraft. The system also allows the setting of a waypoint or the use of a navigation station and the track may be set to fly to the waypoint or station, or at an offset distance, if desired.

3,696,427

RADIO-NAVIGATION SYSTEM

Georges Pierre Nard, Nantes, France, assignor to Compagnie Generale de Geophysique, Paris, France

Filed June 2, 1970, Ser. No. 42,810
Claims priority, application France, June 4, 1969, 6918336
Int. Cl. G01s 5/14
U.S. Cl. 343—112 D **5 Claims**



The invention concerns an improved radio-navigation system for determining the position of a moving body relative to at least two remote transmitters.

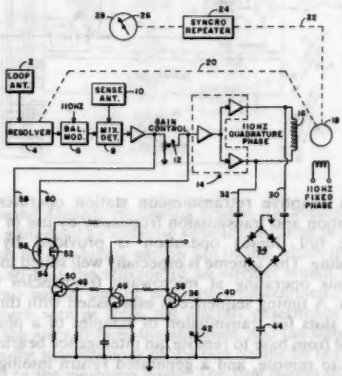
In this radio-navigation system there are produced in the body carried receiver two local LF signals of frequency f_1 and f_2, and the phase differences are determined in phasemeters between each of the local signals and radio-navigation LF signals of the same frequencies, the phases of which are a function of the distances between the transmitters and the moving body. The radio-navigation LF signals are obtained from two radio-navigation HF signals received by the body from the transmitters, the frequencies of which are equal to $F + f_1$ and $F + f_2$, the signals of frequencies f_1 and f_2 being extracted by successive mixings with signals of frequencies $F - F_1$ and F_1.

3,696,428

ADF NEEDLE STABILIZING CIRCUIT

Arthur L. Kemper, and Raymond R. Blaiklock, both of Marion, Iowa, assignors to Collins Radio Company, Cedar Rapids, Iowa

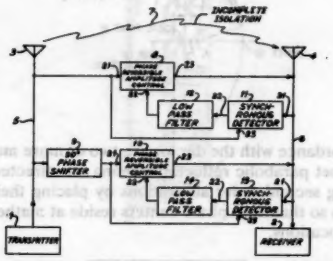
Filed July 30, 1970, Ser. No. 59,610
Int. Cl. G01s 3/42
U.S. Cl. 343—117 R **4 Claims**



This invention relates to means for preventing random wandering of an ADF indicator needle by sensing the magnitude

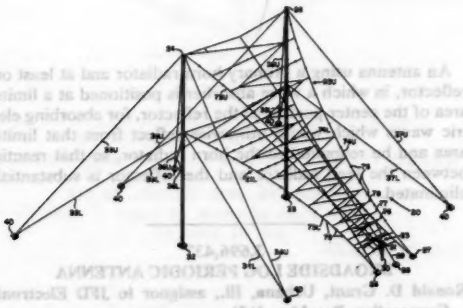
of the "error" signal and shunting out the gain control of the servo amplifier when the magnitude of the "error" signal exceeds a preselected threshold value.

3,696,429
SIGNAL CANCELLATION SYSTEM
Frank J. Tressa, Deer Park, N.Y., assignor to Cutler-Hammer, Inc., Milwaukee, Wis.
Filed May 24, 1971, Ser. No. 146,277
Int. Cl. H04l 5/00
U.S. Cl. 343--180 **5 Claims**



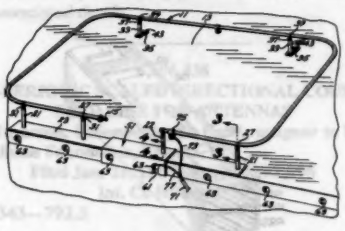
An unwanted r-f signal produced on a receiver line by a nearby transmitter is reduced by adding to it a sample of the transmitted signal, automatically adjusted in phase and amplitude to cancel the unwanted signal.

3,696,430
HIGH GAIN TWO BAY UNIDIRECTIONAL BROADBAND ANTENNA
Terry S. Cory, and Roger A. Markley, both of Richardson, Tex., assignors to Collins Radio Company, Dallas, Tex.
Filed May 25, 1971, Ser. No. 146,764
Int. Cl. H01q 11/10
U.S. Cl. 343—792.5 **14 Claims**



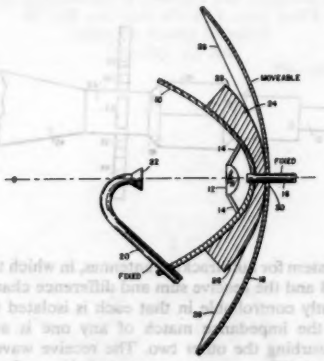
A unidirectional broadband horizontally polarized HF two bay antenna with an upper bay and a lower bay using a larger α angle than the upper bay. Both bays also employ substantially the same τ ratio even though the bay α angles are different. These result in an optimized antenna structure of minimum size for the frequency range of operation, and with resultant points of equal radiated phase from the two bays lying substantially in a vertical line for any one particular operational frequency.

3,696,431
LOW SILHOUETTE ANTENNA
James F. Holland, 21814 Kinard Ave., Torrance, Calif.
Filed Nov. 5, 1970, Ser. No. 87,157
Int. Cl. H01q 1/32
U.S. Cl. 343—713 **2 Claims**



A low silhouette antenna for mounting on an electrically conductive plate, such as a camper top, and including a radiator spaced from such plate. The radiator is formed to define a ring which is open on one side and terminates in ends that form extremities spaced apart a distance sufficient to minimize production of electrical capacitance therebetween. A distance adjusting means is provided for adjusting the frequency of the radiator whereby such antenna may be mounted on a camper and the distance adjusting means adjusted to adjust such radiator to its resonant frequency without the necessity of installing a capacitor.

3,696,432
COMBINED SCAN AND TRACK ANTENNAS
Harold Anderson, Phoenix; Jerry Blanchard Cain, and John G. Doggett, Jr., both of Scottsdale, all of Ariz., assignors to Motorola, Inc., Franklin Park, Ill.
Filed Jan. 15, 1971, Ser. No. 106,792
Int. Cl. H01q 3/12
U.S. Cl. 343—761 **11 Claims**



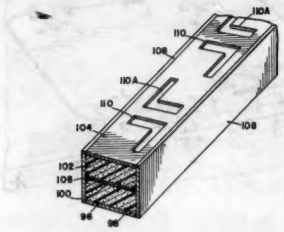
Combined scan and track antennas are disclosed, each comprising a reflector and a feed thereto in which the track reflector and its feed and the feed to the scan reflector are all fixed with respect to each other and the scan reflector rolls in such a manner that a line through the center of the spherical feed antenna and the fixed feed point therefor always is perpendicular to a point on the surface of the spherical reflector through which it extends.

3,696,433

RESONANT SLOT ANTENNA STRUCTURE

Derling G. Killion, San Diego, and Kent B. Roberts, El Cajon, both of Calif., assignors to Teledyne Ryan Aeronautical Company, San Diego, Calif.

Filed July 17, 1970, Ser. No. 55,848
Int. Cl. H01q 13/10
U.S. Cl. 343—770 8 Claims



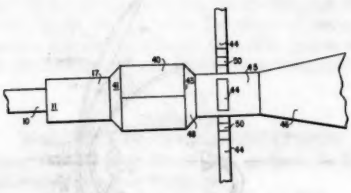
A resonant slot antenna composed of one or more elongated coaxial type radiating elements, each having an inner conductor supported within an outer conductor, the outer conductor having longitudinally spaced slots which are shaped to provide phase reversal between slots and spaced to avoid mutual coupling. This permits a coaxial or strip line antenna to be made with the desirable characteristics of a waveguide type. The antenna is particularly adaptable to construction by printed circuit techniques, with the slots and conductor elements etched in conductive plating on dielectric supporting material, making it possible to construct unitary arrays of multiple elements.

3,696,434

INDEPENDENT MODE ANTENNA FEED SYSTEM

Anttilio F. Sciambi, Jr., Melbourne, Fla., assignor to Radiation Incorporated, Melbourne, Fla.

Filed Jan. 15, 1971, Ser. No. 106,827
Int. Cl. H01q 13/00
U.S. Cl. 343—776 16 Claims



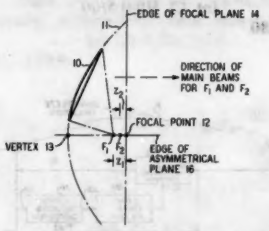
A feed system for autotracking antennas, in which the transmit channel and the receive sum and difference channels are independently controllable in that each is isolated from the other and the impedance match of any one is adjustable without disturbing the other two. The receive wave modes, both sum and difference, are propagated along a first section of waveguide from the antenna, wherein the receive channel energy is extracted near an abrupt junction with a second waveguide section designed to support only sum wave mode propagation. The sum mode is extracted without need for hybrids. The transmit feed and the receive feed lines cooperate to provide built-in diplexer action through appropriate selection of waveguide dimensions for rejection of transmit frequencies from the receive channel and inclusion of band pass filters for rejection of receive frequencies from the transmit channel.

3,696,435

OFFSET PARABOLIC REFLECTOR ANTENNA

Henry Zucker, Parsippany-Troy Hills Township, Morris County, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 24, 1970, Ser. No. 92,400
Int. Cl. H01q 19/14
U.S. Cl. 343—779 3 Claims



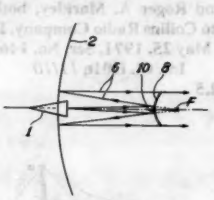
In accordance with the disclosure, two or more main beams of an offset parabolic reflector antenna are directed without producing second order aberrations by placing their respective feeds so that their phase centers reside at mathematically defined locations.

3,696,436

CASSEGRAIN ANTENNA WITH ABSORBER TO REDUCE BACK RADIATION

Hiroshi Yokoi, and Hiroshi Fukumuro, both of Tokyo, Japan, assignors to Kokusai Denshin Denwa Kabushiki Kaisha, Tokyo-to, Japan

Filed Sept. 15, 1970, Ser. No. 72,336
Claims priority, application Japan, Sept. 16, 1969, 44/72710
Int. Cl. H01q 19/14
U.S. Cl. 343—782 1 Claim



An antenna using a primary horn radiator and at least one reflector, in which a wave absorber is positioned at a limited area of the center portion of the reflector, for absorbing electric waves which would otherwise reflect from that limited area and be reapplied to the horn radiator, so that reaction between the feed radiator and the reflector is substantially eliminated.

3,696,437

BROADSIDE LOG PERIODIC ANTENNA

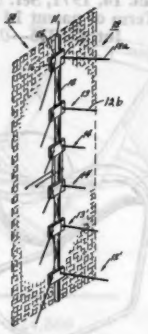
Ronald D. Grant, Urbana, Ill., assignor to JFD Electronics Corporation, Brooklyn, N.Y.

Continuation of Ser. No. 685,093, Nov. 22, 1967, abandoned. This application Aug. 27, 1970, Ser. No. 69,063
Int. Cl. H01q 11/10
U.S. Cl. 343—792.5 25 Claims

This invention teaches an antenna array of the broadside type in which dipoles of differing electrical lengths are stacked vertically above and below an imaginary plane with electrical lengths increasing with increasing distance in moving above and below the imaginary plane. The antenna has symmetry in that for each dipole of the array below the imaginary plane, for example, there is a dipole of substantially equal electrical

length and spacing approximately the same distance above the imaginary plane.

Transposed feeder harness means are employed for joining adjacent dipoles and common output (input) terminals are provided in a position substantially at the location of the imaginary plane. Directional characteristics are obtained by means of Veeing the dipole arms and/or providing a vertically aligned ground screen positioned behind the antenna stack array.



In another embodiment a similar array may be positioned immediately behind the first array in place of the ground screen. Directional characteristics may be obtained through coupling an output (input) utilization means to one and then the other of the arrays which are coupled at their feed terminals by means of a transposed feeder section. The array may also be joined with a conventional endfire array, for example, to form a broadside VHF endfire array and an endfire UHF array or conversely, a broadside UHF array and an endfire VHF array.

Omnidirectional characteristics may be introduced if such an application is either desired or required by bending or otherwise forming the dipole arms so as to provide a substantially U-shaped configuration for each dipole.

As another embodiment the ground screen may be replaced by parasitic elements arranged in a vertically stacked array with the parasitic element being provided for each dipole in the broadside array and being positioned in substantially behind its associated dipole.

3,696,438

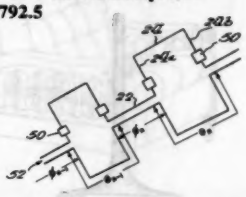
LOG-PERIODIC SCALED DIRECTIONAL COUPLER FEED LINE FOR ANTENNAS

Paul G. Ingerson, Redondo Beach, Calif., assignor to University of Illinois Foundation, Urbana, Ill.

Filed Jan. 21, 1969, Ser. No. 792,398

Int. Cl. H01q 11/10

U.S. Cl. 343—792.5 **7 Claims**



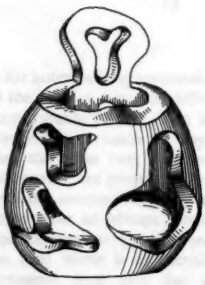
Log-periodic dipole, folded dipole, monopole, folded monopole, and slot arrays fed by a pair of coupled transmission lines which form a log-periodically scaled directional coupler feeder. Alternating scaled sections of coupled and uncoupled lines are employed as a feed unit for antenna arrays, with radiating elements provided in the uncoupled sections.

DESIGNS

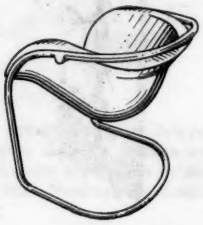
OCTOBER 3, 1972

224,854
TELEVISION STAND OR SIMILAR ARTICLE
Melvin K. H. Choy, 45–219 Nakuluai St., Kaneohe, Hawaii
Filed Nov. 17, 1970, Ser. No. 26,036
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D6—20

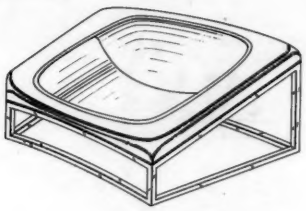
224,855
CHAIR
Patricia Dunbar, 804 Judson, Evanston, Ill. 60202
Filed Nov. 2, 1970, Ser. No. 25,780
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D6—47



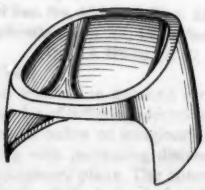
224,856
CHAIR WITH SWINGABLE SEAT
Lawrence E. Charity, New York, N.Y., assignor to Sewell & Charity Ltd., New York, N.Y.
Filed Jan. 14, 1971, Ser. No. 106,630
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D6—49



224,857
EASY CHAIR
Miguel R. Mazure, Av. Central 671–Ofc. 504, San Isidro, Lima, Peru
Filed Feb. 26, 1970, Ser. No. 21,635
Term of patent 7 years
Int. Cl. D6—*02*
U.S. Cl. D6—58



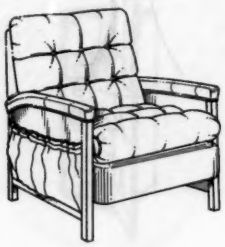
224,858
CHAIR
Kenneth W. Leino, East Detroit, Mich., assignor to Borg-Warner Corporation, Chicago, Ill.
Filed Nov. 23, 1970, Ser. No. 26,118
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D6—65



224,859
DECK CHAIR
Alexander Lawrence Leitch, 38 Gwelanmor Road, Carbis Bay, St. Ives, England, and Anthony Gable, 10 Harriotts Lane, Ashtead, England
Filed July 27, 1970, Ser. No. 24,159
Claims priority, application Great Britain June 10, 1970
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D6—66

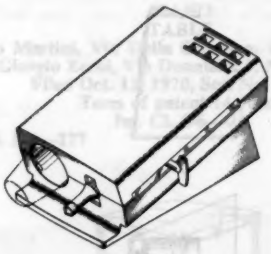
224,860
DECK CHAIR
Alexander Lawrence Leitch, 38 Gwelanmor Road, Carbis Bay, St. Ives, England, and Anthony Gable, 10 Harriotts Lane, Ashtead, England
Filed July 27, 1970, Ser. No. 24,160
Claims priority, application Great Britain May 13, 1970
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D6—66

224,861
CHAIR
Morris F. Fisher, Carmel, Ind., assignor to Mohasco Industries, Inc., Amsterdam, N.Y.
Filed Jan. 6, 1971, Ser. No. 104,540
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D6—71

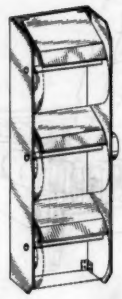


224,862
CHAIR
Thomas Winrow, Naperville, Ill., assignor to Futorian Corporation, Amsterdam, N.Y.
Filed Dec. 7, 1970, Ser. No. 26,322
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D6—73

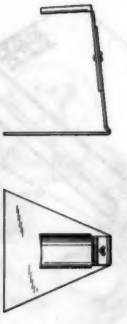
224,863
COMBINED TOOTHBRUSH HOLDER AND DISPENSER FOR TOOTHPASTE AND PAPER CUPS
Bill E. Stevenson, 9092 Adelia Circle, Huntington Beach, Calif. 92646
Filed Oct. 19, 1970, Ser. No. 25,559
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—92



224,864
HOLDER FOR PAPER ROLLS
August Belz, 13 Seestrasse, 9403 Goldach, Switzerland
Filed June 8, 1970, Ser. No. 23,351
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—97



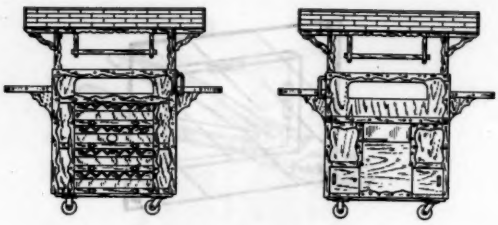
224,865
HOSE SUPPORT
Allen M. Fellows, 15 Island Trail, Sparta, N.J. 07871
Filed Sept. 9, 1970, Ser. No. 24,898
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D6—112



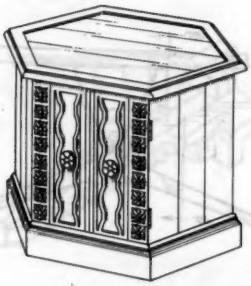
224,866
BOOT HOLDER OR SIMILAR ARTICLE
Leon W. Hammer, Ogden, Utah
(Rte. 2, Weiser, Idaho 83672)
Filed Mar. 10, 1970, Ser. No. 21,841
Term of patent 3½ years
Int. Cl. D6—*99*
U.S. Cl. D6—116

224,867
PEDESTAL CHAIR
Maurice P. Burke, Gstaad, Switzerland, assignor to Bjorgensen, S.A., Fribourg, Switzerland
Filed Dec. 5, 1968, Ser. No. 14,802
Claims priority, application Great Britain June 10, 1968
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D6—120

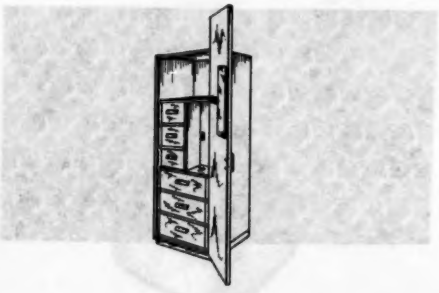
224,868
MOBILE COCKTAIL BAR
Vincent J. Intorcio, 7123 Mentor Ave., Mentor, Ohio 44094
Filed Sept. 14, 1970, Ser. No. 24,991
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—144



224,869
COMMODE
Thomas Winrow, Naperville, Ill., assignor to Futorian Corporation, Amsterdam, N.Y.
Filed Nov. 30, 1970, Ser. No. 26,211
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—149



224,870
WARDROBE CABINET
Arnold H. Klein, Clarksville, N.Y., assignor to Klein Industries, Inc., Cobleskill, N.Y.
Filed Feb. 10, 1971, Ser. No. 114,403
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—164

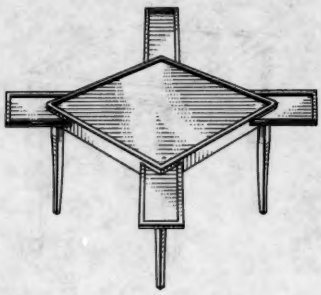


224,871
COMMODE
Thomas Winrow, Naperville, Ill., assignor to Futorian Corporation, Amsterdam, N.Y.
Filed Dec. 7, 1970, Ser. No. 26,320
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—165

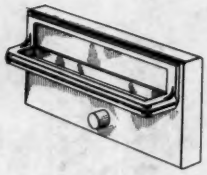
224,872
INFANT'S DRESSING TABLE
Charles L. Voytko, Johnstown, Pa., assignor to Hedstrom Company, Bedford, Pa.
Filed Jan. 4, 1971, Ser. No. 103,956
Term of patent 7 years
Int. Cl. D6—*03*
U.S. Cl. D6—168

224,873
TABLE
Alfredo Martini, Via Della Giardina, Monza, Italy, and Giorgio Zerbi, Via Donatella 5, Milan, Italy
Filed Oct. 12, 1970, Ser. No. 25,468
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—177

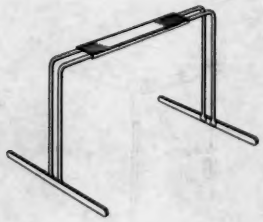
224,874
CARD TABLE
Merwyn O. Cook, 25 E. 9th Ave., Denver, Colo. 80203
Filed May 12, 1970, Ser. No. 22,942
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—157



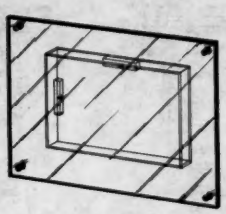
224,875
FACE PANEL FOR A CARD CATALOG DRAWER
Stephen F. McKeon, Utica, N.Y., assignor to Sperry Rand Corporation, New York, N.Y.
Filed Dec. 16, 1970, Ser. No. 26,521
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D6—192



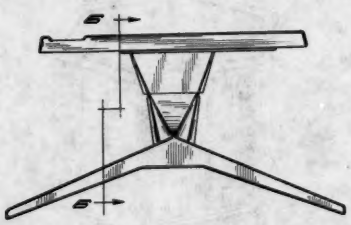
224,876
SEAT BASE
Hugh C. Acton, Ross Township, Kalamazoo County, Mich., assignor to The Vecta Group, Inc., Kalamazoo, Mich.
Filed May 18, 1970, Ser. No. 23,048
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D6—196



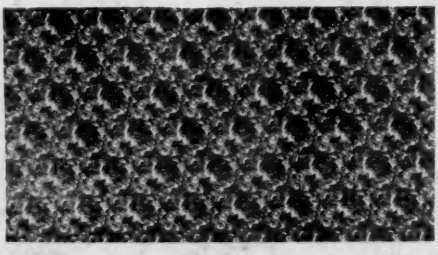
224,877
PICTURE FRAME
Daniel Fendrick, 4105 Leland St., Chevy Chase, Md. 20015
Filed June 29, 1970, Ser. No. 23,700
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—242



224,878
VALET RACK
Robert O. Memmel, P.O. Box 6, Okauchee, Wis. 53069
Filed Nov. 4, 1970, Ser. No. 25,825
Term of patent 7 years
Int. Cl. D6—*08*
U.S. Cl. D6—247

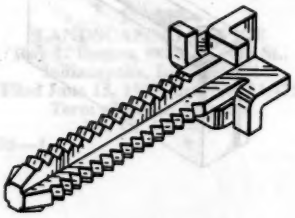


224,879
SHEET OR SIMILAR ARTICLE OF BED LINEN
Leonard C. Clementi, Huntington, N.Y., assignor to Cannon Mills Company, Kannapolis, N.C.
Filed Feb. 19, 1971, Ser. No. 117,212
Term of patent 14 years
Int. Cl. D6—*13*
U.S. Cl. D6—264



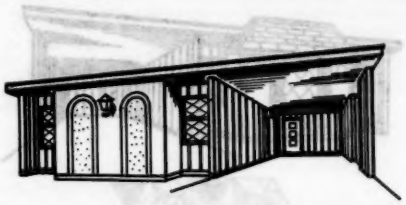
224,880
INSULATION-STRIPPING PLIERS
Isamu Uchida, Urawa, Japan, assignor to Kosoku Electric Co., Ltd., Tokyo, Japan
Filed Nov. 13, 1970, Ser. No. 25,963
Claims priority, application Japan June 17, 1970
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—58

224,881
SCREW
Terence Robert Raynor, London, and Philip Sydney Smith, Bideford, England, assignors to AMP Incorporated, Harrisburg, Pa.
Filed Jan. 21, 1971, Ser. No. 108,683
Claims priority, application Great Britain Aug. 8, 1970
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—267

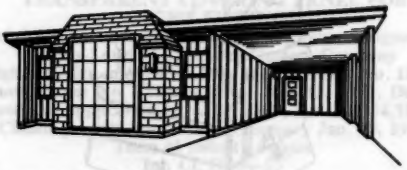


224,882
COMBINED BOTTLE AND DISPENSING PUMP THEREFOR
Marvin Alpern, Glen Ridge, N.J., assignor to Sterling Drug Inc., New York, N.Y.
Filed Feb. 1, 1971, Ser. No. 111,806
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—67

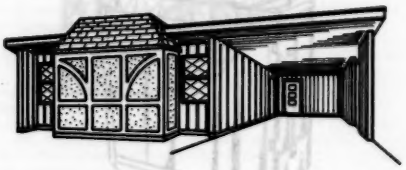
224,883
RESIDENTIAL BUILDING
William J. McNeil, 504 11th Ave., Rock Island, Ill. 61201
Filed Mar. 23, 1971, Ser. No. 127,423
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1



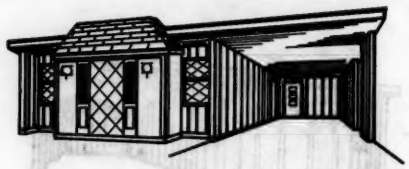
224,884
RESIDENTIAL BUILDING
William J. McNeil, 504 11th Ave., Rock Island, Ill. 61201
Filed Mar. 23, 1971, Ser. No. 127,424
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1



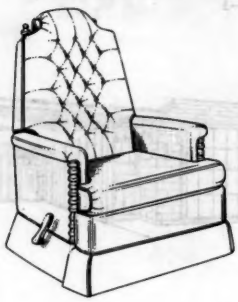
224,885
RESIDENTIAL BUILDING
William J. McNeil, 504 11th Ave., Rock Island, Ill. 61201
Filed Mar. 23, 1971, Ser. No. 127,426
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1



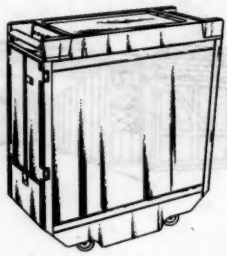
224,886
RESIDENTIAL BUILDING
William J. McNeil, 504 11th Ave., Rock Island, Ill. 61201
Filed Mar. 23, 1971, Ser. No. 127,433
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1



224,887
LOUNGE CHAIR
Stanley P. Nash, Wheaton, Ill., assignor to Mohasco Industries Inc., Amsterdam, N.Y.
Filed Jan. 12, 1970, Ser. No. 20,883
Term of patent 14 years
Int. Cl. D15—*01*
U.S. Cl. D6—1

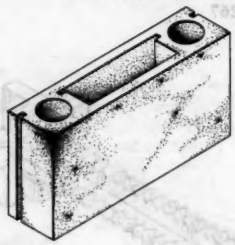


224,888
FOOD CART
Stuart I. Freedman, Los Angeles, Calif., assignor to Walter Kidde & Company, Inc., Clifton, N.J.
Filed July 9, 1970, Ser. No. 23,890
Term of patent 14 years
Int. Cl. D12—*02*
U.S. Cl. D14—3

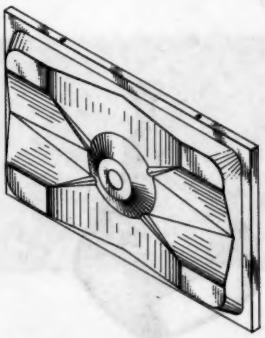


224,889
ARMCHAIR
Thomas Winrow, Naperville, Ill., assignor to Mohasco Industries, Inc., Amsterdam, N.Y.
Filed Jan. 14, 1970, Ser. No. 20,925
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D15—1

224,890
CONSTRUCTION BLOCK
George B. Muse, Hillcrest Drive, Calhoun, Ga. 30701
Filed Oct. 6, 1970, Ser. No. 25,356
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D18—2



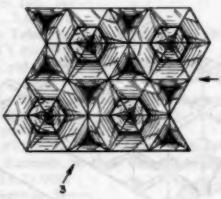
224,891
HEATER BACK PAN
Jay N. Smith, Wichita, Kans., assignor to Impala Industries, Inc., Wichita, Kans.
Filed Sept. 28, 1970, Ser. No. 25,226
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—127



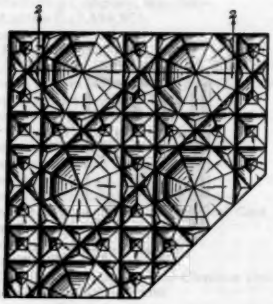
224,892
CHRISTMAS ORNAMENT
Dario Moranduzzo, Strada Tosco Romagnola, 463 Florence, Italy
Filed May 28, 1971, Ser. No. 148,290
Claims priority, application Italy Dec. 1, 1970
Term of patent 7 years
Int. Cl. D11—*05*
U.S. Cl. D29—1

224,893
LANDSCAPING DEVICE
Roy L. Rogers, 9880 W. 10th St., Indianapolis, Ind. 46234
Filed June 15, 1970, Ser. No. 23,475
Term of patent 14 years
Int. Cl. D8—*01*
U.S. Cl. D35—1

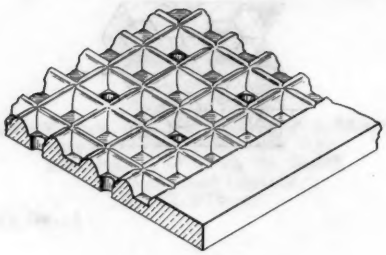
224,894
TRANSPARENT COVERING PANEL FOR LIGHT FITTINGS
Friedrich Clostermann, Hagen, Germany, assignor to Trilux-Lenz KG, Neheim-Husten, Germany
Original design application July 11, 1969, Ser. No. 18,174, now Patent No. 221,176, dated July 13, 1971. Divided and this application June 18, 1970, Ser. No. 24,102
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D48—16



224,895
TRANSPARENT COVERING PANEL FOR LIGHT FITTINGS
Friedrich Clostermann, Hagen, Germany, assignor to Trilux-Lenz KG, Neheim-Husten, Germany
Original design application July 11, 1969, Ser. No. 18,174, now Patent No. 221,176, dated July 13, 1971. Divided and this application Nov. 13, 1970, Ser. No. 24,103
Claims priority, application Germany Jan. 15, 1969
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D48—16

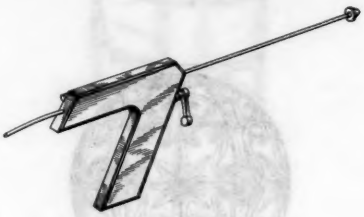


224,896
CEILING PANEL
Michael H. Pelosi, Jr., Broomall, Pa., assignor to CRS Industries, Inc., Conshohocken, Pa.
Filed Sept. 22, 1970, Ser. No. 25,128
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D48—16



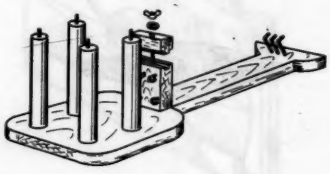
224,897
TOASTER
Donald A. Riel, 400 W. Orangethorpe, Apt. 307A, Fullerton, Calif. 92632
Filed Dec. 3, 1970, Ser. No. 26,273
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D81—10

224,898
CRYOSURGICAL INSTRUMENT
Ronald M. Wallach, Norwalk, and Eugene Franzino, Fairfield, Conn., assignors to Cryomedics, Inc., Bridgeport, Conn.
Filed Oct. 6, 1971, Ser. No. 187,236
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D83—12



224,899
MIRROR
Lois Gahm, 185 Elmwynd Drive, Orange, N.J. 07050
Filed June 4, 1970, Ser. No. 23,321
Term of patent 14 years
Int. Cl. D6—*07*
U.S. Cl. D86—10

224,900
HAND LOOM FOR MAKING WOVEN STRIPS
Opal Eisenbeis, 221 N. Union, Madison, S. Dak. 29660
Filed July 10, 1970, Ser. No. 23,895
Term of patent 14 years
Int. Cl. D15—*06*
U.S. Cl. D92—15



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 3D DAY OF OCTOBER, 1972

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Abbott Machine Co., Inc.: *See—*
Abbott, Samuel L., 3,695,548.

Abbott, Samuel L., to Abbott Machine Co., Inc. Tensioning device for yarn packaging machinery. 3,695,548, Cl. 242-150.000.

Abcor Water Management Company, Inc., mesne: *See—*
Shaines, Alfred; Kalish, Robert L.; and Hamer, Edward A. G., 3,695,964.

Abe, Takeshi: *See—*
Watanabe, Hiroo; Yamamoto, Koosuke; Abe, Takeshi; and Kawamata, Motoo, 3,695,830.

Abex Corporation: *See—*
Graham, Glenn R.; and Biggs, Robert W., 3,695,406.

Abraham, Schulkin: *See—*
Cleary, John P.; and Abraham, Schulkin, 3,695,172.

Abrams, Paul S.; and Peterson, Rudolph G., to Carco, Inc. Marking device. 3,695,216, Cl. 118-300.000.

Abu-Isa, Ismat A., to General Motors Corporation. Platable polypropylene. 3,695,917, Cl. 117-47.00a.

Ace Glass Incorporated: *See—*
De Woody, Charles M., 3,695,642.

ACF Industries, Incorporated: *See—*
Coyle, Edward L.; Josephson, Edgar F.; and Schipper, Dennis J., 3,694,925.

A.C.I. Operations Pty. Limited: *See—*
Corderoy, Henry Morgan, 3,694,994.

Ackley, John W., III. Modular battery charger. 3,696,283, Cl. 320-2.000.

Acton, Hugh C.; and Fink, Roy W., to Tartan Corporation. Seat construction. 3,695,693, Cl. 297-239.000.

Acushnet Company: *See—*
Woolley, Edward R.; and Thompson, William H., 3,695,618.

Adams, Edward J., to Gillette Company, The. Process of assembling pressure container and overcap. 3,694,891, Cl. 29-428.000.

Adams, Frank H.: *See—*
Conner, Algie J.; and Adams, Frank H., 3,696,026.

Adams Rite Manufacturing Company: *See—*
Eads, Charles L.; and Brotman, Harry D., 3,695,068.

Adler, Robert, to Zenith Radio Corporation. Arrangement for converting between acoustic compressional waves and surface waves. 3,696,313, Cl. 333-30.00r.

A.E.I. Corporation: *See—*
Christine, William C.; and Pierce, Joseph E., 3,694,997.

Aero-Flow Dynamics, Inc., (The Wing Company Division): *See—*
Rohrs, Marvin K.; Neary, Robert J.; Rosenberg, Robert B.; Kardas, Alan; and Staats, William R., 3,695,250.

Aerocoat S. A.: *See—*
Wanner, Maurice Paul; and Wallis, Neil Rudolph, 3,695,226.

Aeroprojects Incorporated: *See—*
Walraven, Thomas A.; Maropis, Nicholas; Elmore, William C.; and Devine, Janet, 3,695,500.

Aeroquip Corporation: *See—*
Graves, Robert W., 3,695,636.

Aerpat A.G.: *See—*
Alvi, Zia R.; Heslop, Victor L.; and Summerlin, Frederick A., 3,695,088.
Savage, Donald Stanley, 3,695,086.

Ag-Rain, Inc.: *See—*
Kruse, Frederick V.; and Pichon, James D., 3,695,632.

Aga Aktiebolag: *See—*
Jacobsson, Jan Roland, 3,695,217.
Ljung, Bo Hans Gunnar, 3,696,363.

Agfa-Gevaert Aktiengesellschaft: *See—*
Herzhoff, Peter; Gref, Hans; and Platz, Stephan, 3,695,218.
Kabbe, Hans-Joachim; and von Konig, Anita, 3,695,880.
Kisselmann, Willy; Rumpelein, Fritz; and Kopf, Paul, 3,696,295.

Aihara, Toru: *See—*
Ito, Yoshiyuki; and Aihara, Toru, 3,695,377.

Ainslie, Norman G.; Cheroff, George; Graff, William S.; Howard, James Kent; and Ross, Rupert F., to International Business Machines Corporation. Doped electrical current-carrying conductive material. 3,695,855, Cl. 29-191.600.

Aisin Seiki Kabushiki Kaisha: *See—*
Sakashita, Hitoshi; and Mitsui, Tsutomu, 3,695,198.

Aizawa, Tatsuo: *See—*
Washio, Takaji; Tohi, Yasusuke; and Aizawa, Tatsuo, 3,695,754.

Ajinomoto Co., Inc.: *See—*
Akamatsu, Akira; Takagi, Yasuo; Iwatsuki, Makoto; Kida, Yoko; and Takeshita, Kazuhisa, 3,695,822.

Akamatsu, Akira; Takagi, Yasuo; Iwatsuki, Makoto; Kida, Yoko; and Takeshita, Kazuhisa, to Ajinomoto Co., Inc. Method of coloring a shaped body of poly-γ-alkyl glutamate. 3,695,822, Cl. 8-4.000.

Akesson, Yngve Reinhold; and Wadell, Lars Gustaf Albert, to Products Findus S.A. Vegetable trimming and cutting apparatus. 3,695,323, Cl. 146-81.00r.

Akeyoshi, Kazuyuki; and Hayashi, Naonori, to Asahi Glass Co., Ltd. Process for soldering an inorganic solid oxide product. 3,694,897, Cl. 29-473.100.

Aktiebolaget Electrolux: *See—*
Wallgren, Harald Anton Ake, 3,695,284.

Alaimo, Robert J.; and Pelosi, Stanford S., Jr., to Morton-Norwich Products, Inc. Antifungal thiocyanatobenzothiazoles. 3,696,114, Cl. 260-305.000.

Alamance Industries, Inc.: *See—*
Smith, John R., 3,694,816.

Alberani, Julius, to Teledyne Industries, Inc. Shaft mounted fuel control. 3,695,037, Cl. 60-39.280.

Albert, Robert E. Cold water soluble foam plastic package. 3,695,989, Cl. 161-160.000.

Alcala, Frank. Vacuum and pressure pick up device for home and commercial vacuum cleaners. 3,694,848, Cl. 15-346.000.

Alco Standard Corporation: *See—*
Polin, Jerry, 3,695,911.

Alderton, Howard Kenneth, to Cam Gears Limited. Braking systems. 3,695,733, Cl. 303-21.00a.

Alexander, David George: *See—*
Lloyd, Anthony Michael; and Alexander, David George, 3,696,133.

Alexander, George F.; Kessinger, Orville E., Jr.; Rediger, John R.; and Reinsma, Harold L., to Caterpillar Tractor Company. Resilient mounting for track rollers. 3,695,737, Cl. 305-27.000.

Alexander, Kenneth W., Jr. Uni-runner recreation device. 3,695,626, Cl. 280-12.00k.

Alfa Romeo S.p.A.: *See—*
Colucci, Ivo, 3,695,695.

Alfa-Laval AB: *See—*
Strom, Sven Olof Erik, 3,695,231.

Allcock, Laight & Westwood Limited: *See—*
Parsons, Ronald W., 3,695,495.

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Stroble, Carl P., 3,695,944.

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Allen, Donald J.: *See—*
Kufrin, Frederick W.; Virnoche, Paul R.; Allen, Donald J.; Gokey, Phillip E.; and Rose, Frederick A., 3,694,825.

Allen, Elmo Paul. Combination table bar cabinet. 3,695,742, Cl. 312-237.000.

Allen, Henry C., to United States of America, Army. Solid propellant compositions containing hydroxymethyl-terminated polydienes. 3,695,952, Cl. 149-19.000.

Allen, Herbert. Valve. 3,695,579, Cl. 251-174.000.

Allen, Willard B.; Persons, Charles E.; and Brandon, Marshall K., to United States of America, Navy. Correlators having a time compressed analogue reference. 3,696,414, Cl. 343-5.00r.

Alliance Manufacturing Company, Inc.: *See—*
Deming, Andrew F., 3,694,903.

Allied Chemical Corporation: *See—*
Dementi, Brian A., 3,696,071.
Lichstein, Bernard M.; and Woolf, Cyril, 3,696,150.
Lohr, Thomas E.; and Stephenson, Robert L., 3,695,696.
McCullough, Charles D., 3,696,004.
Stoffel, Robert W., 3,695,697.

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Olsen, Benny; and Olsen, Zenny, 3,695,295.

Allis-Chalmers Manufacturing Company: *See—*
Horn, John M., 3,695,145.

Allmanna Svenska Elektriska Aktiebolaget: *See—*
Ling, Bernt; Persson, Anders; and Svensson, Olof, 3,694,936.
Lundstrom, Hans, 3,695,597.
Nylen, Roland, 3,696,296.
Wallen, Bengt, 3,696,017.

Alphin, John G.; and Fitner, John B., to Clemson University. Tobacco harvesters. 3,695,014, Cl. 56-27.500.

Aluminum Company of America: *See—*
Brondyke, Kenneth J., 3,695,919.

Alvi, Zia R.; Heslop, Victor L.; and Summerlin, Frederick A., to Aerpat A.G. Multi-stage forming machine. 3,695,088, Cl. 72-405.000.

Amchem Products, Inc.: *See—*
Binns, Robert Eric, 3,695,942.

Amerace Esna Corporation: *See—*
Selsor, James Quinn; Turner, Edward Wayne; and Goldberg, Bruce Saul, 3,696,061.

American Can Company: *See—*
Young, William E.; and Mahaffy, Reid A., 3,695,900.
American Cyanamid Company: *See—*
Wiedeman, Oscar Fontaine; Saunders, Kenneth Worden; and O'Connor, Michael Niall, 3,695,833.
American Limmetics Instruments, Inc.: *See—*
Arrington, James R.; and King, Karl Lewis, 3,696,019.
American Seating Company: *See—*
Barecki, Chester J., 3,695,689.
Barecki, Chester J.; and Hozeski, Kenneth W., 3,695,707.
American Standard Inc.: *See—*
Telkes, Maria; and Hahn, Henry, 3,695,903.
American Sterilizer Company: *See—*
Miraldi, Peter Thomas, 3,694,960.
Amheuser-Busch, Incorporated: *See—*
Watz, Martin C., 3,695,845.
AMP Incorporated: *See—*
Kinkaid, Robert John; and Asick, John Car, 3,696,323.
Wasserlein, Henry George, Jr., 3,694,863.
Ampex Corporation: *See—*
Everett, Thomas David, 3,695,553.
Zimmermann, Ernest F., 3,695,131.
Andersen, Clifford W., to Wurlitzer Company, The. Portable music laboratory. 3,695,138, Cl. 84-470.000.
Andersen, Kare: *See—*
Lagercrantz, Bengt Ake; and Andersen, Kare, 3,696,037.
Anderson, Edgar L.: *See—*
Mc Donald, Robert L.; and Anderson, Edgar L., 3,694,962.
Anderson, Gerald R.; and Wann, William C., Jr., to FMC Corporation. Peach pitter. 3,695,322, Cl. 146-28.00r.
Anderson, Harold; Cain, Jerry Blanchard; and Doggett, John G., Jr., to Motorola, Inc. Combined scan and track antennas. 3,696,432, Cl. 343-761.000.
Anderson, Harold E., to Mr. Culloch Corporation. Heat seal for fuel injection nozzles. 3,695,235, Cl. 123-32.00r.
Anderson, Richard W.; and Frick, Hughie R., to Dow Chemical Company, The. Perfluorinated ether sulfides. 3,696,154, Cl. 260-609.00f.
Anderson, Wilmer C.; and Windebank, Robert W., to General Time Corporation. Electret motors capable of continuous rotation. 3,696,258, Cl. 310-5.000.
Andre Rubber Company, Limited: *See—*
Torr, Ralph P.; and Nicolaisen, Juncker Zelo, 3,695,046.
Angelucci, Thomas L.; and Kulicke, Frederick W., Jr., to Kulicke and Soffa Industries, Inc. Bonding tool for through the tool observation bonding and method of bonding. 3,696,229, Cl. 219-85.000.
Anglo-Transvaal Consolidated Investment Company Limited: *See—*
Taylor, Richard Francis, 3,695,724.
Angst, Kurt; and Tunzini, Marco. Waste cone for a spindle. 3,695,018, Cl. 57-34.00p.
Antypas, George A., to Varian Associates. Multilayered III-V photocathode having a transition layer and a high quality active layer. 3,696,262, Cl. 313-94.000.
Aoki, Fumio: *See—*
Oishi, Hiroshi; Aoki, Fumio; Kawano, Shigeru; Muramaisu, Hitoshi; and Saeki, Masahiro, 3,696,383.
Apgar, Waldo Ditmar; D'Asaro, Lucian Arthur; Dixon, Richard Wayne; Dufft, William Henry; Elder, Harry Eugene; and Fraley, Phillip Edward, to Bell Telephone Laboratories, Incorporated. Electroluminescent display apparatus. 3,694,902, Cl. 29-588.000.
Appel, Karl-Richard: *See—*
Ost, Walter; Klaus, Thomas; Dietrich, Jerchel; and Appel, Karl-Richard, 3,696,106.
Arakawa, Hideo: *See—*
Hayashi, Yasutaka; and Arakawa, Hideo, 3,695,023.
Arant, Ronald L. Motorcycle carrier. 3,695,469, Cl. 214-450.000.
Arco Industries Corporation: *See—*
De Lisio, Michael P.; and Clement, Robert L., 3,695,004.
Arcos Corporation: *See—*
Thomas, Royal David, Jr.; and Norcross, James E., 3,696,228.
Arfert, Horst F. W., to Reynolds Metals Company. Apparatus for forming a peripheral bead in flange means of a preformed container. 3,695,806, Cl. 425-398.000.
Argabright, Perry A.; Presley, C. Travis; and Bixel, Harold C., to Marathon Oil Company. Plugging off sources of water in oil reservoirs. 3,695,356, Cl. 166-295.000.
Arian, Charles Mourad; Mahler, Hans Hermann; Hayes, Claude Cecil, Jr.; and Tanner, Hal W., Jr., to International Paper Company. Corrugated board impregnation apparatus. 3,695,219, Cl. 118-50.000.
Arimoto, Heiji: *See—*
Kimura, Hiroshiro; Arimoto, Heiji; Nara, Hirohisa; Miyamatsu, Tsugio; and Kitajima, Mitsuo, 3,695,306.
Arimura, Ichiro; and Kurashina, Kouzo, to Matsushita Electric Industrial Co., Ltd. Contact-copying method for reproducing a magnetic tape. 3,696,219, Cl. 179-100.20e.
Arizona Chemical Company, mesne: *See—*
Davis, Curry Beach, 3,696,164.
Armco Steel Corporation: *See—*
Stark, Marvin L., 3,695,543.
Armstrong Bros. Tool Co.: *See—*
Armstrong, Bruce M.; and Butler, Jack M., 3,695,126.
Armstrong, Bruce M.; and Butler, Jack M., to Armstrong Bros. Tool Co. Indexable turret tool post. 3,695,126, Cl. 82-36.00a.
Armstrong Cork Company: *See—*
Ollinger, James C.; Wolf, Herbert R., Jr.; and Latour, Yves, 3,695,395.
Armstrong, Thomas R., to Honeywell Information Systems Inc. Digital frequency divider. 3,696,402, Cl. 340-347.0dd.
Arnett, Joseph W., Jr.; and Norwood, David W., to Concorde Fibers, Inc. Melt spinning. 3,696,184, Cl. 264-178.00f.
Arning, Klaus H.; and Rumpf, Robert J., to Ford Motor Company. Method of manufacturing a motor vehicle. 3,694,890, Cl. 29-428.000.
Arpajian, Vasken F.: *See—*
Hutchinson, Herman R.; Arpajian, Vasken F.; and Malcomson, Robert S., 3,695,800.
Arrant, Kearney D., to Monsanto Company. Paint striper. 3,695,222, Cl. 118-207.000.
Arrington, James R.; and King, Karl Lewis, to American Limmetics Instruments, Inc. Thallium alloy electrode. 3,696,019, Cl. 204-290.00r.
Arsem, Alvan Donald; and Schwartz, Harold O., to Wurlitzer Company, The. Digital organ system. 3,696,201, Cl. 84-1.010.
Art Drapery Studios, Inc.: *See—*
Roller, Max F., 3,695,329.
Artos D., Ing., Meier-Windhorst Kommanditgesellschaft: *See—*
Meier-Windhorst, Christian August, 3,695,826.
Asahi Glass Co., Ltd.: *See—*
Akeyoshi, Kazuyuki; and Hayashi, Naonori, 3,694,897.
Asahi Kasei Kogyo Kabushiki Kaisha: *See—*
Ishida, Shinichi; Yano, Nobumitsu; Ohshima, Noboru; Fukuda, Hiromichi; and Sato, Takeshi, 3,696,170.
Asahi Kogaku Kogyo Kabushiki Kaisha: *See—*
Mita, Kunio, 3,695,159.
Miyakawa, Seinan, 3,695,157.
Asami, Tomiaki: *See—*
Maryama, Shoji; Saito, Tadashi; and Asami, Tomiaki, 3,695,885.
Ashida, Hiroshi, to Hitachi Shipbuilding and Engineering Co., Ltd. Method for constructing cylindrical structures such as steel chimneys. 3,694,893, Cl. 29-431.000.
Ashley, Milton V., Jr.: *See—*
Benson, Harvey R.; and Ashley, Milton V., Jr., 3,695,142.
Asick, John Car: *See—*
Kinkaid, Robert John; and Asick, John Car, 3,696,323.
Associated Electrical Industries Limited: *See—*
Browning, George William, 3,696,245.
Assour, Jacques Mayer, to RCA Corporation. Avalanche diode. 3,696,272, Cl. 317-234.000.
Ateliers des Charmilles S.A.: *See—*
Goiffon, Thierry; Lehmann, Hans Rudolf; and Schaidl, Hubert, 3,695,144.
Atlantic Scientific Corporation: *See—*
Gear, John, 3,696,386.
Atlas Chemical Industries, Inc.: *See—*
Rutledge, Thomas F., 3,696,044.
Atlas Chemicals Industries, Inc.: *See—*
Edwards, Donald W., 3,695,947.
Atlas Copco Aktiebolag: *See—*
Birrer, Josef, 3,695,717.
Atlas, Gerald D. Anchorage for a boat dock, buoy or the like. 3,695,207, Cl. 114-206.00r.
Atwood Vacuum Machine Company: *See—*
Ploughman, Leonard K., 3,695,662.
Aupoix, Marcel; and Culand, Andre, to Compagnie Generale d'Electricite l'Air Liquide Liquide and Societe Anonyme pour l'Etude et l'Exploitation. Cryogenic connection for the transmission of high electric power and method of manufacture thereof. 3,694,914, I. 29-624.000.
Austin, Severin: *See—*
Knepper, Wilhelm; and Austin, Severin, 3,695,838.
Automated Equipments Corporation: *See—*
Radobenko, William, 3,695,501.
Automatic Packaging Machinery Co.: *See—*
Rosen, Ruth, 3,695,657.
Automotive Products Company, Limited: *See—*
Crawford, Peter F., 3,695,398.
Avery Coonley School, Inc.: *See—*
Busch, William Larry, 3,694,933.
Avoset Food Corporation: *See—*
Ingerson, Philip F., 3,695,889.
Ayars, David M., Jr., to Ayars Fillers, Inc. Container filler-valve volume adjustment. 3,695,315, Cl. 141-368.000.
Ayars Fillers, Inc.: *See—*
Ayars, David M., Jr., 3,695,315.
Ayers, David T., Jr., to Kelsey-Hayes Company. Proportioning device. 3,695,730, Cl. 303-6.00c.
Azote et Produits Chimiques: *See—*
Paul, Claude; and Cheron, Henri, 3,695,856.
Badiano, Jacques; and Commissaire, Henri, to Electronique Marcel Dassault. Radar installation. 3,696,416, Cl. 343-74.000.
Baginski, Albert R.; Okada, David T.; and Stastny, Edwin O., to Mattel, Inc. Fluid-pressure operated thrusting and rotating device. 3,695,148, Cl. 92-92.000.
Bagley, Ferdinand A.: *See—*
Sienkiewicz, Boleslaw; and Bagley, Ferdinand A., 3,695,165.
Bahnsen, Erwin B., to Steiner American Corporation. Door operating mechanism. 3,695,332, Cl. 160-188.000.
Bailey, Darrel E.; and King, Earl M. Metal-cutting apparatus. 3,694,918, Cl. 30-277.000.
Baker, James G., to Polaroid Corporation. Compact four element objective lens. 3,695,750, Cl. 350-221.000.

Baker, William W. Combination vehicle stabilizer and bug deflector. 3,695,674, Cl. 296-1.00s.

Bakker, Donavon L.; and Miller, Walter L., to Butler Manufacturing Company. Feeder for livestock. 3,695,415, Cl. 198-110.000.

Bakker, Johannes Petrus. Patient lifting apparatus. 3,694,829, Cl. 5-81.000.

Bakul, Valentin Nikolaevich; Prikhna, Alexei Iosifovich Alexei; Shulzhenko, Alexandr Alexandrovich; and Gerasimovich, Alexei Vladimirovich, to Ukrainsky Nauchno-Issledovatelsky Konstruktorsko-Tekhnologichesky Institut Sinteticheskikh Sverkhtverdykh Materiaov i Instrumenta GOSPANA. Method and device for providing high pressure and high temperature. 3,695,797, Cl. 425-77.000.

Baldwin, D. H., Company: *See—*
Bunger, David A., 3,696,200.

Baliklock, Raymond R.: *See—*
Kemper, Arthur L.; and Baliklock, Raymond R., 3,696,428.

Ballantyne, Jack R., to Hughes Aircraft Company. Adaptive pulse quantizer system. 3,696,415, Cl. 343-6.5lc.

Ban, Itsuki. Tape drive speed changing apparatus. 3,695,620, Cl. 274-4.00d.

Bancroft, George H., to Bendix Corporation, The. Liquid propellant storage tank. 3,695,050, Cl. 62-45.000.

Bangor Punta Operations, Inc.: *See—*
Taccone, Russell W., 3,695,339.

Banks, Robert L., to Phillips Petroleum Company. Isobutene and/or isoamylenes from cat poly gasoline. 3,696,163, Cl. 260-683.00d.

Baratto, Elia: *See—*
Pomella, Piero; Baratto, Elia; and Lauro, Luciano, 3,696,398.

Barberg, Vernon G. Multi-use, body-relaxing furniture unit. 3,695,684, Cl. 297-1.000.

Bardos, Andras M. Method and apparatus and inspecting surfaces. 3,695,771, Cl. 356-210.000.

Barecki, Chester J., to American Seating Company. Vehicular safety chair. 3,695,689, Cl. 297-191.000.

Barecki, Chester J.; and Hozeski, Kenneth W., to American Seating Company. Recliner vehicle seat. 3,695,707, Cl. 297-460.000.

Barendsen, Pieter: *See—*
Lauber, Ernst Abraham; and Barendsen, Pieter, 3,695,718.

Barnes-Hind Pharmaceuticals, Inc., mesne: *See—*
Sturgeon, Robert G., 3,695,280.

Barnett, Joseph; and Smith, John D., to Export Leaf Tobacco Company. Hogshead splitter. 3,695,670, Cl. 294-88.000.

Barrett, James R., to Fiberglass Structures. Tank venting system. 3,695,010, Cl. 55-385.000.

Barrios, David Joseph. Golf game with club stroker. 3,695,612, Cl. 273-87.200.

Barron, Norman, 5% to Sellers, Wm. Douglas, Brace, George A.; d/b/a and Sellers and Brace. Manually controlled automatic information display device. 3,696,395, Cl. 340-325.000.

Barry, Vincent T., to Carrier Corporation. Control circuit for an air conditioning system. 3,695,054, Cl. 62-115.000.

Barta, Franz; and Grupp, Alfred F., to Mayercord Co., The. Web processing apparatus. 3,694,928, Cl. 34-159.000.

Bartlett, George A.: *See—*
Watts, Woodrow H.; and Bartlett, George A., 3,695,314.

Barton, Frederic D. Demonstrator system for vehicle cooling system. 3,694,934, Cl. 35-13.000.

Bartz, Edward S.: *See—*
Siesennop, W. Wayne; Gibbs, Norman E.; and Bartz, Edward S., 3,695,147.

Basher, Hedley James; and Edwards, Leonard Robert. Upholstery supports and the manufacture thereof and structures incorporating such upholstery supports. 3,695,706, Cl. 297-452.000.

Bateman, Willis: *See—*
Metcalf, Arnold; and Bateman, Willis, 3,695,863.

Battelle Development Corporation, The, mesne: *See—*
Randolph, Alan D.; and Crawford, Rufus W., 3,695,932.

Battelle Memorial Institute: *See—*
Zuppiger, Paul, 3,695,183.

Baum, Gilbert. Electrical display systems. 3,696,324, Cl. 340-1.00r.

Baun Aktiengesellschaft: *See—*
Harms, Luhr; and Voigt, Gunter, 3,694,916.

Baur, Robert, to Bunker-Ramo Corporation, The. Non-explosive electrically initiated heat-ignitable actuator. 3,695,116, Cl. 74-2.000.

Bausenbach, Arthur E.; and Palopoli, Frank, to Sanitary Controls, Inc. Dual compactor assembly. 3,695,175, Cl. 100-193.000.

Baxter Laboratories, Inc.: *See—*
Grimes, Raymond E.; and Bruen, Robert W., 3,696,002.
Salinger, Fred G., 3,696,232.

Baynes, William R.; La Branche, Harvey W.; and Soulakis, George, to Mattel, Inc. Curve track system for toy vehicles. 3,695,513, Cl. 238-10.00e.

Bays, Robert D. Car theft prevention device. 3,695,067, Cl. 70-63.000.

Beau, Raymond: *See—*
Le Page, Madeleine A.; Beau, Raymond; and Jacques, Maison-Alfort, 3,696,053.

Beaudoin, Jean Paul; Hogue, Hiral; and Larocque, Jacques; deceased (by Larocque, Patricia Powers; executrix). Package tape with sticks retained thereon. 3,695,423, Cl. 206-56.00a.

Beaulieu, Alexander J.; and Johnson, Derwyn C., to Canada, Her Majesty the Queen of, as represented by the Minister of National Defence. Capacitor laser. 3,696,307, Cl. 331-94.500.

Bebinger, Jack E., to Westinghouse Electric Corporation. Hopper assembly for batch disposer. 3,695,519, Cl. 241-46.00b.

Bechtel International Corporation, mesne: *See—*
Inamdar, Sayed-Ibrahim S., 3,696,367.

Beck, Charles, Machine Corporation: *See—*
Switliski, Vincent S.; and Harmon, Arthur R., 3,694,999.

Beckenbach, Karl. Method and means for sintering materials, particularly dolomite and magnesite, in a shaft furnace. 3,695,595, Cl. 263-29.000.

Beckman Instruments, Inc.: *See—*
Griffith, Paul A.; and Rohrer, David A., 3,695,813.
Spyropopoulos, Constantine G., 3,695,772.

Becton Dickinson and Company: *See—*
Esmond, William G., 3,695,445.

Bednarski, Valery N. Gas chromatography method and apparatus. 3,695,003, Cl. 55-67.000.

Beer, Ekkehard: *See—*
Lind, Heinrich; Mahl, Hans; and Beer, Ekkehard, 3,695,972.

Behr, Michael I.: *See—*
King, Chia-Cheng; Jorgensen, Arnold J.; and Behr, Michael I., 3,696,255.

Behrens, William H.: *See—*
Buttke, Richard A.; Sabattino, Anthony; Orlando, Daniel; and Behrens, William H., 3,695,939.

Belden, Richard C.: *See—*
Bouchard, Richard J.; and Belden, Richard C., 3,696,408.

Bell Telephone Laboratories, Incorporated: *See—*
Apgar, Waldo Ditmar; D'Asaro, Lucian Arthur; Dixon, Richard Wayne; Dufft, William Henry; Elder, Harry Eugene; and Fraley, Phillip Edward, 3,694,902.
Bitler, Jesse S., 3,696,421.
Copeland, John Alexander, III, 3,696,347.
Deisch, Cecil Winston, 3,696,253.
Maldonado, Juan Ramon, 3,695,747.
Ortel, William Charles Gormley, 3,695,875.
Paoli, Thomas Lee; and Ripper, Jose Ellis, 3,696,310.
Zucker, Henry, 3,696,435.

Belle, Pierre. Apparatus for and method of continuously measuring a temperature gradient in relation to altitude. 3,695,111, Cl. 73-345.000.

Beloit Corporation: *See—*
Busker, Leroy H.; and Mosher, Robert J., 3,696,292.

Bendix Corporation, The: *See—*
Bancroft, George H., 3,695,050.
Cohen, Richard L., 3,696,390.
Egerton, McKenny W., Jr., 3,696,407.
Quatrano, John, 3,695,592.

Beneze, Heinz Wilhelm, to Firestone Tire & Rubber Company, The. Apparatus for making tires. 3,695,808, Cl. 425-426.000.

Bennett, Charles H. Power boat with trim tabs. 3,695,204, Cl. 114-66.50p.

Bennett, Frank; and Conibear, Ivor John. Electrolytic hygrometer cells and method of using same. 3,696,007, Cl. 204-1.00t.

Benson, Harvey R.; and Ashley, Milton V., Jr., to United States of America, Army. Range safety device. 3,695,142, Cl. 89-1.812.

Benz, Mark G., to General Electric Company. Method of producing a sintered cobalt-rare earth intermetallic product. 3,695,945, Cl. 148-103.000.

Beregi, Laszlo; Hugon, Pierre; and Desnoyers, Pierre, to Societe en nom Collectif Science Union et Cie Societe Francaise de Recherche Medicale. Azabicycloalkyl urea compounds. 3,696,117, Cl. 260-326.300.

Berg Electronics, Inc.: *See—*
Olsson, Billy E., 3,696,319.

Berthold, H., Messinglinienfabrik und Schriftiesserei AG: *See—*
Guldenpfennig, Hans, 3,695,155.

Bertolini, Gianni; and Vinsani, Mario, to Olivetti-General Electric S.p.A. Monostable multivibrator. 3,696,254, Cl. 307-273.000.

Besser, John E.: *See—*
Werts, Arthur P.; and Besser, John E., 3,696,050.

Betts, Max William; and Robinson, Frank, to Courtaueds Limited. Knitting method and knitted garment. 3,695,063, Cl. 66-176.000.

Betts, Robert E. Delta squib circuit. 3,695,178, Cl. 102-28.00r.

Beusink, Bernard Joseph. Tiltable shear plate. 3,694,915, Cl. 30-32.000.

Bialek, Joseph J. Training device for teaching digital logic operations. 3,694,931, Cl. 35-19.00a.

Bichel, Darwin Carl; Malcolm, Robert La Verne; and Slaverns, Wayne Eldon. Adjustable steering column for an agricultural machine. 3,695,627, Cl. 280-87.00a.

Biggs, Robert W.: *See—*
Graham, Glenn R.; and Biggs, Robert W., 3,695,406.

Billeter, Henry R.; and Allen, Charles S., to Sloan Valve Company. Remotely actuated flush valves. 3,695,288, Cl. 137-360.000.

Binns, Robert Eric, to Amchem Products, Inc. Zirconium rinse for phosphate coated metal surfaces. 3,695,942, Cl. 148-6.15r.

Biolik, Alexander. Baby thermometer spoon. 3,695,110, Cl. 73-343.00r.

Birdyshaw, Walter L.: *See—*
Garrett, Leo Lawrence; and Birdyshaw, Walter L., 3,696,372.

Birrer, Josef, to Atlas Copco Aktiebolag. Tunneling machine. 3,695,717, Cl. 299-31.000.

Bitler, Jesse S., to Bell Telephone Laboratories, Incorporated. Space diversity phased array retransmission system using time division. 3,696,421, Cl. 343-100.0td.

Bixel, Harold C.: *See—*
Argabright, Perry A.; Presley, C. Travis; and Bixel, Harold C., 3,695,356.

Bjorkman, Bengt Harry: *See—*
Lundin, Seth Johan Roland; and Bjorkman, Bengt Harry, 3,696,207.

Bkold, Mats Folke. Spacer clip for joining and supporting crosswisely extending reinforcement. 3,694,988, Cl. 52-678.000.

Black and Decker Manufacturing Co., The: *See—*
Stielper, Henry J., 3,694,967.

Black, Thomas J.; and Sawyer, Carl B., to Westermann, Werner F. High speed coin counting and sorting. 3,695,279, Cl. 133-3.000.

Blakeley, James, to Victaulic Company of America, mesne. Coupling for plastic pipe. 3,695,638, Cl. 285-112.000.

Blakely, Richard P., to Case, J. I., Company. Hydraulic control linkage for implement. 3,695,474, Cl. 214-771.000.

Blount, Elmo M.; and Prueger, Nicolas J., to Mobil Oil Corporation. Well completion systems. 3,695,358, Cl. 166-302.000.

Blum, Alvin S., to Ohio Nuclear, Inc. Method and apparatus for determining volume of a lung. 3,695,254, Cl. 128-2.080.

Bodkins, Arthur I., to Zelman, M. James. Optical reflector. 3,695,743, Cl. 350-1.000.

Boehringer, C. H., Sohn: *See—*
Ost, Walter; Klaus, Thomas; Dietrich, Jerchel; and Appel, Karl-Richard, 3,696,106.

Boehringer Ingelheim G.m.b.H.: *See—*
Eberlein, Wolfgang; Nickl, Josef; Heider, Joachim; Dahms, Gerhard; and Kobinger, Walter, 3,696,091.

Boerma, Michael J., to Outboard Marine Corporation. Internal combustion engine exhaust gas discharge system. 3,695,238, Cl. 123-65.00e.

Boggian, Umberto: *See—*
De Barbieri, Ettore; and Boggian, Umberto, 3,694,814.

Bohm, Horst Otto: *See—*
Wincierz, Peter; Ruhle, Manfred; Kuchler, Heinz; Borgstedt, Hans Ulrich; and Bohm, Horst Otto, 3,695,866.

Boise Cascade Corporation: *See—*
Cook, Charles F., 3,695,506.

Boissevain, Thomas A.: *See—*
Palombo, Gaston Albert; and Boissevain, Thomas A., 3,696,354.

Bol, Jan Paul; Gebhart, Joseph; and Seger, Gunther, to Laporte Industries Limited. Method for measuring and/or monitoring the size of particles in suspension. 3,695,765, Cl. 356-102.000.

Boland, Bernard W., to Motorola, Inc. Insulated gate field-effect device and method of fabrication. 3,696,276, Cl. 317-235.00r.

Boliden Aktiebolag: *See—*
Bostrom, Karl-Johan, 3,695,373.

Bolliand, Robert, to Societe Rhodiaceta. Process for the manufacture of a stuffing material. 3,696,185, Cl. 264-280.000.

Bolotin, Evgeny Moiseevich; Ierusalimsky, Boris Nikolaevich; Ostrovsky, Igor Semenovich; Razmerov, Vladimir Ivanovich; Ratin, Valentin Isidorovich; Rivilis, Mikhail Evseevich; Saveliev, Leonid Ivanovich; Khaidurov, Leonid Konstatinovich; Khodosh, Vladimir Iexandrovich; and Pisarev, Nikolai Dmitrievich. Tunnelling shield with jack for vertical adjustment of cutter drum. 3,695,719, Cl. 299-33.000.

Bolotin, Evgeny Moiseevich; Ierusalimsky, Boris Nikolaevich; Ostrovsky, Igor Semenovich; Razmerov, Vladimir Ivanovich; Ratin, Valentin Isidorovich; Rivilis, Mikhail Evseevich; Saveliev, Leonid Ivanovich; Khaidurov, Leonid Konstantinovich; Khodosh, VladimirAlexandrovich; and Pisarev, Nikolai Dmitrievich. Tunnelling shield. 3,695,720, Cl. 299-33.000.

Bonner, Willard Hallam, Jr., to Du Pont de Nemours, E. I., and Company. Flash extrusion of polyvinyl chloride. 3,696,181, Cl. 264-53.000.

Borbe-Wanner AG: *See—*
Kuoni, Xaver, 3,695,307.

Borden, Douglas G.: *See—*
Reynolds, George A.; Laakso, Thomas M.; Borden, Douglas G.; and Williams, Jack L. R., 3,696,072.

Borden, Inc.: *See—*
Re, Jerry Peter, 3,696,064.

Borgstedt, Hans Ulrich: *See—*
Wincierz, Peter; Ruhle, Manfred; Kuchler, Heinz; Borgstedt, Hans Ulrich; and Bohm, Horst Otto, 3,695,866.

Borriello, Aleardo. Electromechanical apparatus for slinging and turning over roll material. 3,695,460, Cl. 214-1.0qd.

Bosch, Robert, G.m.b.H.: *See—*
Schadlich, Fritz, 3,695,365.
Schnaebel, Eberhard; Fleischer, Helmut; Zechnall, Richard; Domann, Helmut; Maisch, Wolfgang; and Christ, Klaus, 3,696,270.

Bosse, Robert W., to Groov-Pin Corporation. Insert driver device. 3,694,888, Cl. 29-240.000.

Bossert, Friedrich; and Vater Wulf, to Farbenfabriken Bayer Aktiengesellschaft. Sulphur-containing 1,4-dihydropyridine derivatives. 3,696,112, Cl. 260-294.80f.

Bossler, Franklin B.: *See—*
Pazhia, Vincent B.; and Bossler, Franklin B., 3,695,388.

Bostrom, Karl-Johan, to Boliden Aktiebolag. Wheel-supported transport vehicle having maximum permitted axel pressure and being adapted to transport simultaneously loads of theoretically unlimited total weight. 3,695,373, Cl. 180-14.00a.

Bouchard, Richard J.; and Belden, Richard C., to Sanders Associates, Inc. Keyboard encoder. 3,696,408, Cl. 340-365.000.

Boucris, Hubert, to Compagnie Generale d'Automatisme. Dispenser for self-adhering label. 3,695,981, Cl. 156-584.000.

Bowker, John Kent, to Itek Corporation. Detail boundary detection systems. 3,696,249, Cl. 250-220.00m.

Bowles Fluidics Corporation: *See—*
Stouffer, Ronald, 3,695,607.

Bowling, Joseph L., Jr., to Carborundum Company, The. Abrasive blast cleaning system. 3,694,964, Cl. 51-9.000.

Boyer, Lynn Forrest; and Johnson, Anderson Forbes, Jr., to Western Electric Company, Incorporated. Selective coating. 3,695,928, Cl. 117-212.000.

Braaten, Norman J., to Linquist & Vennum, mesne. Finger-touch faceplate. 3,696,409, Cl. 340-365.000.

Brace, George A.; d/b/a: *See—*
Barron, Norman, 3,696,395.

Bradel, Norman F., to Kinney, S. P., Engineers, Inc. Goggle valve with limit switch. 3,695,300, Cl. 138-94.300.

Brainerd, Gideon R. Analog-to-digital converter. 3,696,404, Cl. 340-347.0ad.

Brandon, Marshall K.: *See—*
Allen, Willard B.; Persons, Charles E.; and Brandon, Marshall K., 3,696,414.

Brandt, Theodore C.; and Schulze, James L., Sr., to General Electric Company. Pilot and main fuel gas supply means for pressurized gas-fired space heater. 3,695,811, Cl. 431-43.000.

Braunstein, David M., to Celanese Corporation. Polybutylene terephthalate-oxymethylene polymer compositions. 3,696,171, Cl. 260-860.000.

Breslow, David S., to Hercules Incorporated. Azidoformates from reduced polymerized fatty acids. 3,696,126, Cl. 260-349.000.

Brevik, Elmer Lawrence. Face mask. 3,695,265, Cl. 128-146.200.

Bridge, Alan G., to Chevron Research Company. Multi-stage desulfurization. 3,696,027, Cl. 208-210.000.

Bridgestone Liquefied Gas Company, Ltd.: *See—*
Yamamoto, Katsuro; Obata, Kuniyoshi; and Sato, Toru, 3,694,986.

Briggs, Albert Theodore, to United Engineering and Foundry Company. Strip coil feeding device. 3,695,542, Cl. 242-70.600.

Brimer, Joe W. Von. Combustion product processing device and method. 3,695,192, Cl. 110-8.00a.

Brimm, Collen K.: *See—*
Groom, Robert G.; and Brimm, Collen K., 3,696,351.

Brinkley, Max D.; and Kerr, Glenn D., to Goodyear Tire & Rubber Company, The. Apparatus for wrapping a flexible endless band into a coil. 3,694,998, Cl. 53-116.000.

Brisson, David W. Board game apparatus. 3,695,614, Cl. 273-130.0ac.

Bristol-Myers Company: *See—*
Judy, Peter Frederick; Hudyma, Thomas William; and Partyka, Richard Anthony, 3,696,111.
Perron, Yvon G.; and Douglas, James L., 3,696,145.

British Ropes Limited: *See—*
Paddington, Arthur L., 3,695,635.

British Vis-ueen Limited: *See—*
Highfield, Peter Edward; and Hill, Gordon John, 3,695,969.

Broadbent, Graham; and Mansfield, John Rickard, to Imperial Chemical Industries Limited. Sampling method and apparatus. 3,695,113, Cl. 73-421.000.

Brobston, Scott. Golf course with target greens and separate putting greens. 3,695,619, Cl. 273-176.00a.

Brock, Robert J.; and Thomas, Gordon D., to Kimberly-Clark Corporation. High bulk laminates. 3,695,985, Cl. 161-129.000.

Brodie, Ricard A. Magnetic battery mounting. 3,695,938, Cl. 136-173.000.

Brody, Norman M., to Norman Industries, Inc. Three-dimensional plastic colored article. 3,695,982, Cl. 161-5.000.

Brondyke, Kenneth J., to Aluminum Company of America. Metal coating process. 3,695,919, Cl. 117-52.000.

Brotman, Harry D.: *See—*
Eads, Charles L.; and Brotman, Harry D., 3,695,068.

Brower, James P., to Richards Manufacturing Company. Over-a-door support for cervical traction apparatus. 3,695,256, Cl. 128-75.000.

Brown & Williamson Tobacco Corporation: *See—*
Summers, Thomas W., 3,695,274.

Brown, Arnold E., to Kusan, Inc. Endless-track-supported vehicle. 3,695,736, Cl. 305-18.000.

Brown, David, Tractors Limited: *See—*
Eastwood, Thomas, 3,695,403.

Brown, John S., to FMC Corporation. Molding machine with spray defrost. 3,695,895, Cl. 99-136.000.

Brown, Philip, to Mintray Limited. Methods of manufacturing garments. 3,694,817, Cl. 2-243.00r.

Browning, George William, to Associated Electrical Industries Limited. Viewing screen mechanism for electron microscope. 3,696,245, Cl. 250-49.50e.

Bruce, Ralph E. Temperature compensating refrigerant charging device. 3,695,055, Cl. 62-157.000.

Bruen, Robert W.: *See—*
Grimes, Raymond E.; and Bruen, Robert W., 3,696,002.

Bruinsma, Norman G., to Gleason Works, The. Method and apparatus for roll-forming or roll-finishing gear pieces. 3,695,078, Cl. 72-101.000.

Brumlik, George C. Construction element for the assembly of models and the like. 3,694,954, Cl. 46-29.000.

Brundage, Robert Wesley, to Emerson Electric Co. Variable sealed hydraulic pump or motor. 3,695,791, Cl. 418-131.000.

Bruner, Mates A. Removable watch band. 3,695,494, Cl. 224-4.00e.

Bruno, Loeb. Wrist watch with changeable case. 3,695,031, Cl. 58-88.00r.

Bryan, Roland J., Jr.: *See—*
Smith, Andrew I.; and Bryan, Roland J., Jr., 3,696,078.

Bryant, Michael I.; and Jones, Charles E., to Burlington Industries, Inc. Tire fabric. 3,695,326, Cl. 152-358.000.

Bublitz, Robert F.: *See—*
Siemonsen, Frederik A.; and Bublitz, Robert F., 3,695,084.

Buchanan, Robert, to Perkin-Elmer Corporation, The. Specimen analysis in an electron microscope. 3,696,246, Cl. 250-49.50a.

Bucher-Guyer AG Maschinenfabrik: *See—*
Hauser, Rudolf Martin, 3,695,575.

Bucholz, Allan A., to Monitor Cabinets, a division of Comerco, Inc. Knockdown sectional shelving. 3,695,190, Cl. 108-91.000.

Budd Company, The: *See—*
Herring, James M., Jr., 3,695,186.

Bull, Gerald V.; and Palacio, Luis M., to Space Research Corporation. Sub-caliber projectile. 3,695,181, Cl. 102-93.000.

Bunger, David A., to Baldwin, D. H., Company. Automatic sequential voicing. 3,696,200, Cl. 84-1.030.

Bunker-Ramo Corporation: *See—*
Lawson, Robert R.; and Metzinger, Leonard L., 3,695,032.

Bunker-Ramo Corporation, The: *See—*
Baur, Robert, 3,695,116.

Burger, William H., to Kimberly-Clark Corporation. Method for applying elastic ribbon to fabrics. 3,694,815, Cl. 2-224.00a.

Burlington Industries, Inc.: *See—*
Bryant, Michael I.; and Jones, Charles E., 3,695,326.

Burns, Harold S. Indicator. 3,696,385, Cl. 340-316.000.

Burrell, Gary L., to King Radio Corporation. Navigation receiver/communications transceiver and frequency synthesizer associated therewith. 3,696,422, Cl. 343-100.000.

Burroughs Corporation: *See—*
George, David J.; and Iwan, Wilfred D., 3,695,767.
Groom, Robert G.; and Brimm, Collen K., 3,696,351.
King, Chia-Cheng; Jorgensen, Arnold J.; and Behr, Michael I., 3,696,255.
Qutogue, Virgilio J., 3,696,353.

Burt, Patrick V., to Monsanto Chemicals Limited. Production of foamable resins. 3,696,060, Cl. 260-2.50b.

Burt, Ralph E.: *See—*
Tufts, Donald W.; Burt, Ralph E.; Davis, Victor I., Jr.; Queenan, James F.; Maloon, Richard A.; and Waterman, David W., 3,696,235.

Busch, William Larry, to Avery Coonley School, Inc. Student learning spaces. 3,694,933, Cl. 35-60.000.

Buschbom, Floyd E.; and Johnson, Roger L., to Veda, Inc. Material handling apparatus with diverter means. 3,695,234, Cl. 119-52.00b.

Busker, Leroy H.; and Mosher, Robert J., to Beloit Corporation. Microwave moisture sensing system including means to continuously change the transmission path of the microwave energy. 3,696,292, Cl. 324-58.50a.

Butler, Jack M.: *See—*
Armstrong, Bruce M.; and Butler, Jack M., 3,695,126.

Butler Manufacturing Company: *See—*
Bakker, Donavon L.; and Miller, Walter L., 3,695,415.

Butler National Corporation: *See—*
Perkins, Earl Stuart, 3,696,425.
Perkins, Earl Stuart, 3,696,426.

Buttke, Richard A.; Sabattino, Anthony; Orlando, Daniel; and Behrens, William H., to Globe-Union Inc. Process and machine for manufacturing electric storage batteries. 3,695,939, Cl. 136-176.000.

Byrd, Geoffrey Charles Morton, to Imperial Chemical Industries Limited. Treatment of packages. 3,695,827, Cl. 8-155.200.

Byrnls, Mark K.: *See—*
Twidall, William H.; and Byrnls, Mark K., 3,695,015.

C & M Manufacturing Company, mesne: *See—*
Weisker, Alexander; and Smith, Raymond L., Jr., 3,695,463.

Cadillac Products, Inc.: *See—*
Williams, Robert J., 3,695,692.

Cain, Jerry Blanchard: *See—*
Anderson, Harold; Cain, Jerry Blanchard; and Doggett, John G., Jr., 3,696,432.

Cairns, John Francis: *See—*
Colchester, John Edward; Cairns, John Francis; and Carey, John Gerard, 3,696,113.

Caisley, Charles Frederick, to Zenith Carburettor Company Limited, The. Automatic cold starting devices for internal combustion engines. 3,695,591, Cl. 261-390.000.

Cale, Albert Duncan, Jr.: *See—*
Lunsford, Carl Dalton; and Cale, Albert Duncan, Jr., 3,696,104.

Califoam Corporation of America: *See—*
Gentile, Carlos A., 3,695,128.

Callerame, Joseph, to Chemical Generators Inc. Process of producing chlorine dioxide. 3,695,839, Cl. 423-479.000.

Calsilox S.A.: *See—*
Vrijma, Berend, 3,695,129.

Cam Gears Limited: *See—*
Alderton, Howard Kenneth, 3,695,733.

Cameron Iron Works, Inc.: *See—*
Carman, Richard Jan, 3,696,288.

Canada, Her Majesty the Queen of, as represented by the Minister of National Defence: *See—*
Beaulieu, Alexander J.; and Johnson, Derwyn C., 3,696,307.

Canadian Patents and Development Limited: *See—*
Sugisawa, Hiroshi, 3,695,896.

Cannell, John Carjeag; Leaper, Rodney Seymour; and Paratt, Noel James. Process for making composite materials from refractory fibres and metal. 3,695,335, Cl. 164-97.000.

Cannito, Vincent F.: *See—*
Fernandez, Raul O.; Cannito, Vincent F.; and Olsen, Oscar, 3,696,188.

Capdevielle, Pierre; and Weissmann, Jean, to Institut Francais des Petrole, des Carburants et Lubrifiants. Safety device for the storage and distribution of liquids, particularly hydrocarbons, making use of a pressurized auxiliary fluid. 3,695,289, Cl. 137375.000.

Carborundum Company, The: *See—*
Bowling, Joseph L., Jr., 3,694,964.

Carco, Inc.: *See—*
Abrams, Paul S.; and Peterson, Rudolph G., 3,695,216.

Carey, John Gerard: *See—*
Colchester, John Edward; Cairns, John Francis; and Carey, John Gerard, 3,696,113.

Carlsen, Earl W., to Food Industries Research & Engineering, Inc. Installation for the filling of pallets with fruit or other easily damaged products. 3,694,996, Cl. 53-35.000.

Carlson, Gilbert Fritz, to International Telephone & Telegraph Corporation. Hydraulic valve with fluid meter connections. 3,695,105, Cl. 73-211.000.

Carlson, Lee Allen; and Miekka, Richard George, to Dennison Manufacturing Company. Microelectrophotographic sheet. 3,695,874, Cl. 96-1.800.

Carman, Richard Jan, to Cameron Iron Works, Inc. Optically coupled control circuit. 3,696,288, Cl. 323-21.000.

Carmichael Paul D.: *See—*
Pogonowski, Ivo C.; and Carmichael Paul D., 3,695,047.

Caron, Jean, to Service d'Exploitation Industrielle des Tabacs et des Allumettes. Machine for opening cartons. 3,695,151, Cl. 93-53.0bf.

Carpenter, Walter C. Locking wheel chocks for tandem wheel vehicles. 3,695,394, Cl. 188-32.000.

Carreira, Leonard M., to Xerox Corporation. Electrophoretic imaging apparatus including means to coat and electrify the imaging electrode. 3,696,020, Cl. 204-300.000.

Carrier Corporation: *See—*
Barry, Vincent T., 3,695,054.
Damratowski, Leonard P.; and Huesgen, Eugene L., 3,695,621.
Griffin, Charles K., 3,695,052.
Griffin, Charles K., 3,695,053.

Carson, Marge, Inc.: *See—*
Carson, Robert M., 3,695,690.

Carson, Robert M., to Carson, Marge, Inc. Furniture covering arrangement. 3,695,690, Cl. 297-218.000.

Casanova, John: *See—*
Sorensen, Robert L.; and Casanova, John, 3,695,807.

Case, J. I., Company: *See—*
Blakely, Richard P., 3,695,474.
Jansson, Birger F., 3,695,789.

Casey, Tommie; Farrar, Ed; and Cockrum, Grover. Sportsman's boat. 3,694,835, Cl. 9-2.001.

Casio Computer Kabushiki Kaisha: *See—*
Kashio, Toshio, 3,696,394.

Cassinelli, Giuseppe; Cotta, Ernesto; Pennella, Paolo; and Faustini, Remo, to Societa Farmaceutical Italia. Antibiotic substance libanomycin. 3,696,194, Cl. 424-115.000.

Castiglia, Anthony J. Streamlining motorcycle gas tank closure device. 3,695,480, Cl. 220-24.0gt.

Castle, Maurice E. Disposable splint. 3,695,258, Cl. 128-87.00r.

Caterpillar Mitsubishi Ltd.: *See—*
Ito, Yoshiyuki; and Aihara, Toru, 3,695,377.

Caterpillar Tractor Co.: *See—*
Loyd, Calvin D., 3,694,896.

Caterpillar Tractor Company: *See—*
Alexander, George F.; Kessinger, Orville E., Jr.; Rediger, John R.; and Reinsma, Harold L., 3,695,737.
Engelking, Frederick S.; and Loyd, Calvin D., 3,695,641.

Catterfeld, Fritz C.; Macaluso, Sebastian B.; and Weber, Lawrence D., to North American Rockwell Corporation. Hydraulic power tool. 3,695,367, Cl. 173-163.000.

Celanese Corporation: *See—*
Braunstein, David M., 3,696,171.
Vogelfanger, Elliot A., 3,696,076.

Celmac Plasclip Limited: *See—*
Oliver, Keith H.; and Taylor, Donald, 3,694,989.

Ceschini, Eugene S., to Gulf Research & Development Company. Shifting data display. 3,696,396, Cl. 340-336.000.

Cesco Mfg. Corporation: *See—*
Glass, Robert I.; Phillips, William; and House, William R., 3,695,125.

Chabrier, Martial, to C.N.M.P. Berthiez. Tool support for a machine tool. 3,695,127, Cl. 82-36.00r.

Chadwick, William R., to United States of America, Navy. Gun-launched glide vehicle with a mid-course and terminal guidance control system. 3,695,555, Cl. 244-3.140.

Chafetz, Harry: *See—*
Patmore, Edwin L.; Siegart, William R.; and Chafetz, Harry, 3,696,146.

Chakoian, George; and Crowell, Russell T., to United States of America, Navy. Air brake for airborne missiles. 3,695,177, Cl. 102-4.000.

Champion Chemicals, Inc.: *See—*

Mayo, Frank H., 3,696,040.

Chapman, Ronald H., to Motorola, Inc. Active filter for selecting and controlling signals. 3,696,252, Cl. 307-233.000.

Chapman, Thomas Henry, to Gunson's Sortex Limited. Apparatus for controlling a flow of a pressure fluid. 3,695,517, Cl. 316/080/3/8/025.

Chargeishvili, Tengiz Sergeevich: *See—*
Kandelaki, David Georgievich; Chargeishvili, Tengiz Sergeevich; and Skvortsov, Georgy Alexandrovich, 3,695,977.

Charlier, J. Edson; and Schell, Elmer H. Concrete pan forms. 3,695,574, Cl. 249-175.000.

Charnock, Harold: *See—*
Dickinson, George Alfred; and Charnock, Harold, 3,695,859.

Chartet, Andre, to Societe Anonyme des Usines Chausson. Process for brazing parts of aluminium and aluminium alloys. 3,694,899, Cl. 29-495.000.

Chartet, Andre, to Societe Anonyme des Usines Chausson. Corrugated dissipator for tube and dissipator radiator core and process for manufacturing the same. 3,695,347, Cl. 165-172.000.

Chastan-Bagnis, Lucien. Self-propelled floating dock and separator filter assembly for treating polluted water surfaces and nautical works. 3,695,441, Cl. 210-292.000.

Chemcell Limited: *See—*
Chopra, Sohinder Nath; and Turmel, Hilaire Marcel, 3,695,990.

Chemical Generators Inc.: *See—*
Callerame, Joseph, 3,695,839.

Chemical Projects Limited: *See—*
Pogorski, Louis A., 3,695,483.

Chemische Werke Huls Aktiengesellschaft: *See—*
Knepper, Wilhelm; and Austin, Severin, 3,695,838.
Nordsiel, Karl-Heinz, 3,696,087.

Chen, Allen, to Lorton Laboratories, Ltd. Method of covering shoes. 3,694,939, Cl. 36-7.300.

Cheroff, George: *See—*
Ainslie, Norman G.; Cheroff, George; Graff, William S.; Howard, James Kent; and Ross, Rupert F., 3,695,855.

Cheron, Henri: *See—*
Paul, Claude; and Cheron, Henri, 3,695,856.

Chessmore, Donald O.; and Jaffe, Joseph, to Chevron Research Company. Catalytic cracking by addition of titanium to catalyst. 3,696,025, Cl. 208-113.000.

Chevet, Robert; and Coualard, Jacques, to Compagnie General d'Electricite. Manufacture of gas electrodes for fuel cells. 3,695,936, Cl. 136-122.000.

Chevron Research Company: *See—*
Bridge, Alan G., 3,696,027.
Chessmore, Donald O.; and Jaffe, Joseph, 3,696,025.
Graf, Peter E., 3,695,152.

Chicago Bridge & Iron Company: *See—*
Walker, James Donald, 3,696,029.

Chinoin Gyogyszer es Vegyeszeti Termekek Gyara: *See—*
Meszaros, Zoltan; Knoll, Jozsef; and Szentmiklosi, Peter, 3,696,197.

Chodorow, Ingram S., to Technalytics Incorporated. Retention suture bridge. 3,695,271, Cl. 128-335.000.

Chomyn, Karl D., to Esso Research and Engineering Company. Selective hydrogenation of diolefins. 3,696,160, Cl. 260-677.00h.

Chopra, Sohinder Nath; and Turmel, Hilaire Marcel, to Chemcell Limited. Crinkled and fibrillated ribbon. 3,695,990, Cl. 161-168.000.

Chow, Sui-Wu: *See—*
Matzner, Markus; Reichle, Walter T.; Chow, Sui-Wu; and McGrath, James E., 3,696,131.
Matzner, Markus; Reichle, Walter T.; Chow, Sui-Wu; and McGrath, James E., 3,696,132.

Christ, Klaus: *See—*
Schnaebel, Eberhard; Fleischer, Helmut; Zechnall, Richard; Domann, Helmut; Maisch, Wolfgang; and Christ, Klaus, 3,696,270.

Christine, William C.; and Pierce, Joseph E., to A.E.I. Corporation. Food packaging machine with synchronized drive mechanism. 3,694,997, Cl. 53-112.00r.

Chrysler Corporation: *See—*
Werner, Lawrence E., 3,694,895.

Chujo, Kiyoshi; Ishihara, Tetsuo; and Osawa, Hiroshi, to Diacel Ltd. Coated polyolefin films and process for preparing same. 3,695,922, Cl. 117-76.00f.

Chung, Jerome; and Shiuh, Hsuing, to Johns-Manville Corporation. Method of determining one or more properties of asbestos fibers by turbidity measurement. 3,695,763, Cl. 356-36.000.

Churley, George: *See—*
Hartley, Richard S.; Churley, George; and Houser, F. Douglass, 3,695,171.

Ciba-Geigy AG: *See—*
Guglielmetti, Leonardo; and Duennenberger, Max, 3,696,193.

Ciba-Geigy Corporation: *See—*
Ingerson, Paul G., 3,696,438.
Jansen, Gert; and Clauson-Kaas, Niels, 3,696,125.
Kartschmaroff, Peter; and Moser, Paul, 3,696,135.
Rodriguez, Herman Robert; and De Stevens, George, 3,696,093.
Schlapfer, Hans, 3,696,097.

Cincinnati Milacron Inc.: *See—*
Renner, Howard W.; and Moores, John A., 3,694,971.

Cincinnati Mine Machinery Co., The: *See—*
Krekeler, Claude B., 3,695,726.

Ciska, Manfred; and Hubner, Klaus, to Siemens Aktiengesellschaft. Start circuit for DC motor having a thyristor commutator. 3,696,277, Cl. 318-138.000.

Claas, August, to Raussendorf & Co. G.m.b.H. Maschinenfabrik. Rotary plow. 3,695,361, Cl. 172-67.000.

Clague, John Henry, to Mannin Engineering Limited. Pipe couplings. 3,695,640, Cl. 285-116.000.

Clark, Arthur C.; and Timmons, Ted, to Holiday Vehicle Specialties, Inc. Automobile camper mounting. 3,695,676, Cl. 296-23.0mc.

Clark, Charles J.: *See—*
Sesky, Julius; and Clark, Charles J., 3,695,727.

Clark Equipment Company: *See—*
Reinhardt, Robert L., 3,695,709.

Clark, J. L., Manufacturing Co.: *See—*
Foster, John A.; and Filipowicz, Carl A., 3,695,481.

Clark, Richard J., Jr.; Veron, Harry; Gilmour, Alexander S., Jr.; and Lockwood, David L., to Cornell Aeronautical Laboratory, Inc. Magnetically modulated vacuum arc diode. 3,696,264, Cl. 313-160.000.

Clark, Robert F.; and Krantz, Karl W., to General Electric Company. Polyphenylene-oxide-organopolysiloxane block co-polymers. 3,696,137, Cl. 260-448.80r.

Clark, Willard F., to Dow Chemical Company, The. Cast explosive composition containing thiourea. 3,695,948, Cl. 149-2.000.

Clark, Willard F., to Dow Chemical Company, The. Amino-aldehyde resin blasting composition containing gaseous voids. 3,695,950, Cl. 149-19.000.

Clarkson, Frederick C., Jr., to General Motors Corporation. Automatic setting motion-sensing control device. 3,695,362, Cl. 173-2.000.

Clauson-Kaas, Niels: *See—*
Jansen, Gert; and Clauson-Kaas, Niels, 3,696,125.

Clay, Burton Ross, to RCA Corporation. Holographic multicolor technique. 3,695,744, Cl. 350-3.500.

Clay, Robert A., 5% to Wheeler, Max R. Pneumatic jack for motor vehicles. 3,695,582, Cl. 254-93.0hp.

Cleary, John P.; and Abraham, Schulkin, to International Pollution Controls Corporation. Automatic refuse compaction system. 3,695,172, Cl. 100-45.000.

Clecak, Nicholas J.; Cox, Robert J.; and Moreau, Wayne M., to International Business Machines Corporation. High speed azide resists. 3,695,886, Cl. 96-91.00n.

Clement, Robert L.: *See—*
De Lisio, Michael P.; and Clement, Robert L., 3,695,004.

Clemson University: *See—*
Alphin, John G.; and Fitner, John B., 3,695,014.

Cleusix, Willy, to OMEGS Louis Brandt & Frere S. A. Timepiece movement. 3,695,035, Cl. 58-42.500.

Clipsham, Ian Sweet: *See—*
Meyer, Dolph Allan; Phelps, Ross Leslie; Sykes, Edward Henry; Clipsham, Ian Sweet; Seidel, David Paul; Gray, Donald; and Ractivand, Theodore Demetrius, 3,694,855.

Cluett, Peabody & Co., Inc.: *See—*
Fischer, George, 3,694,870.

Clyde Corporation: *See—*
Ginther, Gary D., 3,695,461.

C.N.M.P. Berthiez: *See—*
Chabrier, Martial, 3,695,127.

Coachmen Industries, Inc.: *See—*
Corson, Claude E., 3,695,666.

Coale, Harold D. Poly(arylene sulfide) smoking element. 3,695,276, Cl. 131-191.000.

Cobbeldick, Charles R.: *See—*
Langan, John P.; and Cobbeldick, Charles R., 3,696,222.

Cober Fabbrica Articoli Sportivi: *See—*
Covini, Lorenzo, 3,695,623.

Cockburn, Stanley D. Closure latch. 3,695,663, Cl. 292-216.000.

Cockrum, Grover: *See—*
Casey, Tommie; Farrar, Ed; and Cockrum, Grover, 3,694,835.

Codos, William V., to Pathe Equipment Company, Inc. Multi-needle sewing machines simulating piped seams. 3,695,196, Cl. 112-164.000.

Cohen, Maurice. Display rack with annular mounting ring. 3,695,457, Cl. 211-177.000.

Cohen, Richard L., to Bendix Corporation, The. Digital magnetic wheel logic control network. 3,696,390, Cl. 340-324.00r.

Cohen, William D.; and Worster, David E. Connected rotatable pliable disk and rigid disk with annular groove for recording using an air bearing. 3,696,350, Cl. 340-174.10e.

Colby, Thomas H., to Shell Oil Company. Process for organophosphorus vinyl esters production. 3,696,176, Cl. 260-986.000.

Colchester, John Edward; Cairns, John Francis; and Carey, John Gerard, to Imperial Chemical Industries Limited. Manufacture of bipyridylium salts and related compounds. 3,696,113, Cl. 260-295.0am.

Cole, Edward L.; and Hess, Howard V., to Texaco Inc. Continuous process for separating oily sludges. 3,696,021, Cl. 208-13.000.

Coleman, Harold R., to Tee-Pak, Inc. Method of improving coloring agent crocking fastness of polymeric alcohol films. 3,695,904, Cl. 99-176.000.

Colgate-Palmolive Company: *See—*
Gray, Frederick William, 3,696,041.
Hewitt, Gordon Trent; and Giordano, Annie Sue, 3,696,034.
Inamorato, Jack Thomas, 3,696,056.

Collins Radio Company: *See—*
Cory, Terry S.; and Markley, Roger A., 3,696,430.

Kemper, Arthur L.; and Baliklock, Raymond R., 3,696,428.
Colucci, Ivo, to Alfa Romeo S.p.A. Seat for motor vehicles. 3,695,695, Cl. 297-341.000.
Columbia Broadcasting System, Inc.: *See—*
Sharp, Paul H., 3,695,385.
Columbia Ribbon and Carbon Manufacturing Co., Inc.: *See—*
De Laurentis, Peter; and Newman, Douglas A., 3,695,912.
Cometti, Andre; Fouche, Jean; and Le Goff, Yves, to Rhone-Poulenc S.A. Azaborolidine compounds. 3,696,103, Cl. 260-268.00r.
Commercial Solvents Corporation: *See—*
Miescher, Guido M., 3,696,000.
Commichau, Axel Klaus, to Mobil Oil Corporation. Organic compositions containing tetraoctyl-(dimethyl-amino) methylene diphosphonate as anti-wear agent. 3,696,036, Cl. 252-49.900.
Commissaire, Henri: *See—*
Badiano, Jacques; and Commissaire, Henri, 3,696,416.
Commons, Ward T. Dirigible wheel device. 3,695,374, Cl. 180-27.000.
Compagnie des Ateliers et Forges de la Loire: *See—*
Grand, Rene, 3,695,337.
Compagnie des Ateliers et Forges de la Loire (St. Chamond, Fuirminy, St-Etienne, Jacob Holtzer): *See—*
Demeaux, Jean, 3,695,946.
Compagnie General d'Electricite: *See—*
Chevet, Robert; and Coualard, Jacques, 3,695,936.
Compagnie Generale d'Automatisme: *See—*
Boucris, Hubert, 3,695,981.
Compagnie Generale de Geophysique: *See—*
Nard, Georges Pierre, 3,696,427.
Compagnie Generale d'Electricite: *See—*
Moisson-Franckhauser, Francois, 3,695,057.
Compagnie Generale d'Electricite l'Air Liquide Liquide: *See—*
Aupoix, Marcel; and Culand, Andre, 3,694,914.
Compur-Werk Gesellschaft mit beschrankter Haftung & Co.: *See—*
Fahlenberg, Paul, 3,695,158.
Conapa, Leonard L.: *See—*
Garrison, Robert A.; and Conapa, Leonard L., 3,695,378.
Concorde Fibers, Inc.: *See—*
Arnett, Joseph W., Jr.; and Norwood, David W., 3,696,184.
Conibear, Ivor John: *See—*
Bennett, Frank; and Conibear, Ivor John, 3,696,007.
Conlon, William J.: *See—*
Valbona, Bruno M.; Conlon, William J.; and Voglesonger, Harry M., 3,695,006.
Conn. Engineering Assoc. Corporation: *See—*
Jossick, James L., 3,695,795.
Conner, Algie J.; and Adams, Frank H., to Universal Oil Products Company. Method for activating a hydrocracking catalyst. 3,696,026, Cl. 208-111.000.
Consiglia Nazionale Delle Ricerche: *See—*
Credali, Lino; and Parrini, Paolo, 3,696,031.
Continental Can Company: *See—*
Ruekberg, Herbert S., 3,695,475.
Continental Can Company, Inc.: *See—*
Frankenberg, Henry E., 3,695,201.
Ruekberg, Herbert S., 3,695,476.
Continental Oil Company: *See—*
Gordon, Ronnie D., 3,696,084.
Washecheck, Paul H., 3,696,134.
Control Concepts, Inc.: *See—*
Zeuner, Kenneth W., 3,695,293.
Cook, Charles F., to Boise Cascade Corporation. Palletized container bottom construction. 3,695,506, Cl. 229-37.000.
Cook, Ray G.: *See—*
Wise, Harold L.; Walters, Arley; and Cook, Ray G., 3,695,844.
Cooksey, William Harold, to Lucas, Joseph, (Industries) Limited. Ignition distributors. 3,694,905, Cl. 29-598.000.
Cookson, Cecil T. Reversible engine mount. 3,695,240, Cl. 123-73.00a.
Cooper, Hal B. H. Alkali metal production. 3,695,864, Cl. 75-66.000.
Cooper, James Joseph, Jr., to International Telephone and Telegraph Corporation. Electrical connector. 3,696,321, Cl. 339-94.00a.
Copeland, John Alexander, III, to Bell Telephone Laboratories, Incorporated. Single wall domain information transfer arrangement. 3,696,347, Cl. 340-174.0tf.
Copeland Refrigeration Corporation: *See—*
Gannaway, Edwin L., 3,695,786.
Copp, Albert R. Method for making twisted cable. 3,695,027, Cl. 57-162.000.
Corderoy, Henry Morgan, to A.C.I. Operations Pty. Limited. Method and apparatus for packaging jars and like articles in cartons. 3,694,994, Cl. 53-26.000.
Cornell Aeronautical Laboratory, Inc.: *See—*
Clark, Richard J., Jr.; Veron, Harry; Gilmour, Alexander S., Jr.; and Lockwood, David L., 3,696,264.
Corning, Robert C., Jr., to Sonoco Products Company. Method for forming tubular container body and tubular container body produced thereby. 3,695,971, Cl. 156-275.000.
Corrigan, Gordon D.; Lee, Donald H.; Olsen, Howard E.; and Petry, Robert J., to General Motors Corporation. Drive mode selection system for transmissions. 3,695,121, Cl. 74-753.000.
Corson, Claude E., to Coachmen Industries, Inc. Tailgate bumper mount. 3,695,666, Cl. 293-73.000.
Cory, Terry S.; and Markley, Roger A., to Collins Radio Company. High gain two bay unidirectional broadband antenna. 3,696,430, Cl. 343-792.500.
Costa, Eugen; Ene, Lucian; Dumitrescu, Stelica; and Covaci, Ioan, to Policlinica de Stomatologie Protetica. Method of fabricating dental crowns and bridges from gold. 3,695,333, Cl. 164-35.000.
Cotta, Ernesto: *See—*
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Coualard, Jacques: *See—*
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Coulter Electronics, Inc.: *See—*
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Couquet, Pierre Jean. Pile or plastic tiles for flooring and like applications. 3,694,983, Cl. 52-384.000.
Courtaueds Limited: *See—*
Betts, Max William; and Robinson, Frank, 3,695,063.
Covaci, Ioan: *See—*
Costa, Eugen; Ene, Lucian; Dumitrescu, Stelica; and Covaci, Ioan, 3,695,333.
Covini, Lorenzo, to Cober Fabbrica Articoli Sportivi. Safety ski binding. 3,695,623, Cl. 280-11.350.
Cox, Clyde Harold. Dludge dewatering. 3,695,173, Cl. 100-74.000.
Cox, Robert J.: *See—*
Clecak, Nicholas J.; Cox, Robert J.; and Moreau, Wayne M., 3,695,886.
Coyle, Edward L.; Josephson, Edgar F.; and Schipper, Dennis J., to ACF Industries, Incorporated. Humidity control in a temperature controlled railway car. 3,694,925, Cl. 34-46.000.
CPC International Inc.: *See—*
Deaton, Irving F., 3,695,933.
Crabtree, Kenneth L., to Keyes Fibre Company. Tray with reinforced article pockets. 3,695,479, Cl. 217-26.500.
Cragmet Corporation: *See—*
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Crain, Richard W.: *See—*
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Crawford, Peter F., to Automotive Products Company, Limited. Broke shoe housing and retainer means. 3,695,398, Cl. 188-736.000.
Crawford, Rufus W.: *See—*
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Creamer, Charles Edward, to Union Carbide Corporation. Organosiloxane elastomers. 3,696,068, Cl. 260-29.10b.
Credali, Lino; and Parrini, Paolo, to Consiglia Nazionale Delle Ricerche and Montecatini Edison S.p.A. Osmosis process. 3,696,031, Cl. 210-23.000.
Cremer, Gottfried; and Kraus, Joachim, to Fetok GmbH. Means for attaching slabs and tiles on building structures. 3,694,981, Cl. 52-235.000.
Cresci, Paul A.; and Paris, Thomas H. Hydraulic lift controls. 3,695,710, Cl. 298-22.00r.
Crestani, Bruno: *See—*
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Cristy, Albert B.; and Kachioff, Yuval, to Eastman Kodak Company. Package for fragile articles. 3,695,424, Cl. 206-62.00r.
Crivellaro, Giovanbattista; and Crestani, Bruno, to Gruppo Tepetit S.p.A. Stable aqueous steroid phosphate solutions. 3,696,195, Cl. 424-175.000.
Cromer, George Philip, to General Electric Company. Battery coil construction having a ruffled edge electrode. 3,695,935, Cl. 136-13.000.
Cronin, Timothy H., to Pfizer Inc. Process for the synthesis of substituted quinazolin-4-ones. 3,696,102, Cl. 260-251.0qa.
Cross, William Telford: *See—*
Steel, Margaret Lilian; and Cross, William Telford, 3,696,183.
Crosswy, Frank L.; and Kalb, Henry T., to United States of America, Air Force. Photomultiplier for a laser velocimeter. 3,695,761, Cl. 356-28.000.
Crottaz, Roland: *See—*
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Crouzet: *See—*
Jullien-Davin, Jean, 3,695,572.
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Crowley, Richard P. Method of preparing a tufted rug with cellular fibers. 3,694,873, Cl. 28-72.000.
Crownover, Joseph W.; Wilhelm, John I.; and Thompson, Ray E. Electronic ranging apparatus with transmitter-receiver cycling. 3,696,419, Cl. 343-13.00r.
Croy, Charles T.: *See—*
Kyle, Thomas A.; and Croy, Charles T., 3,695,768.
Cruchant, Serge Alfred Joseph, to Societe de l'Aerotrain. Arrangement for securing walls together. 3,695,383, Cl. 180-127.000.
Cruger, Robert W.; and Silver, Floyd G., to Gulf & Western Industrial Products Company. Aircraft arresting apparatus. 3,695,559, Cl. 244-110.00c.
Cuir, Gerard: *See—*
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Cuir, Jean Pierre; and Cuir, Gerard. Apparatus for cutting sheet material. 3,695,132, Cl. 83-98.000.
Culand, Andre: *See—*
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Culligan International Company: *See—*
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Cunningham, Robert A.; and Winkler, John T., to Martin-Marietta Corporation. Laser tracking method and apparatus. 3,696,248, Cl. 250-203.00r.

Cunningham, Victor Ralph; and Dodson, Thomas Stanley, to Porous Plastics Limited. Process for preparing microporous polyurethane resin sheets by casting the resin on a porous sintered thermoplastic polymeric resin support surface. 3,696,180, Cl. 264-48.000

Current, John Marvin; and Smalley, Rodney Roger, to Johns-Manville Corporation. Method for feeding and wrapping sheet material. 3,695,965, Cl. 156-187.000.

Currier, Robert Lee.: *See—*
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Curtis & Marble Machine Company: *See—*
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Cutler-Hammer, Inc.: *See—*
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Cyclo Manufacturing Company: *See—*
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Czulak, Joseph; Freeman, Norman H.; and O'Connell, James R. Method and apparatus for processing curd in the manufacture of cheese. 3,695,893, Cl. 99-116.000.

Dafler, Gene L.: *See—*
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Dahms, Gerhard: *See—*
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Dake Corporation: *See—*
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Damratowski, Leonard P.; and Huesgen, Eugene L., to Carrier Corporation. Shaft seal for fluid handling machine. 3,695,621, Cl. 277-75.000.

Danfoss A/S: *See—*
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Daniel, Cecil A. Adjustable support. 3,695,562, Cl. 248-23.000.

Daniel Industries, Inc.: *See—*
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Daniel, Kenneth D., to Video Engineering, Inc. Appliance theft alarm using voltage magnitude switch. 3,696,378, Cl. 340-280.000.

Daniels, Charles M., Jr., to Milbar Corporation. Plier jaws. 3,694,834, Cl. 7-5.500.

Danly Machine Corporation: *See—*
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Dart Industries, Inc.: *See—*
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D'Asaro, Lucian Arthur: *See—*
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Davey, F. W., and Company Proprietary Limited: *See—*
Smith, Victor Frederick, 3,695,296.

Davies, Philip Hywel; Hobden, Maurice Vernon; Hulme, Kenneth Fraser; and Jones, Oliver. Process for preparing single crystalline Ag_3AsS_3 and Ag_3SbS_3 and solid solutions thereof. 3,696,038, Cl. 252-62.900.

Davis, Curry Beach, to Arizona Chemical Company, mesne. Molecular sieve 13-X catalyzed isomerization of alpha-pinene-improvement of catalyst activity. 3,696,164, Cl. 260-675.500.

Davis, Lewis M.; and Hesling, Donald M., to Sealed Power Corporation. Piston ring construction. 3,695,622, Cl. 277-139.000.

Davis, Stanley Paul, to Signetics Corporation. Air isolated integrated circuit and method. 3,696,274, Cl. 317-235.000.

Davis, Victor I., Jr.: *See—*
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Dazor Manufacturing Corporation: *See—*
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De Barbieri, Ettore; and Boggian, Umberto. Diver's mask. 3,694,814, Cl. 2-14.00d.

De Filippo, Domenico. Plurimillenary automatic universal calendar having time division reproducing scales of a slidable type. 3,694,943, Cl. 40-13.000.

De Laurentis, Peter; and Newman, Douglas A., to Columbia Ribbon and Carbon Manufacturing Co., Inc. Thermal copying method and products. 3,695,912, Cl. 117-36.200.

De Lisio, Michael P.; and Clement, Robert L., to Arco Industries Corporation. Gas cleaning system. 3,695,004, Cl. 55-225.000.

De Marco, Robert Frank, to Intercole Automation, Inc. Material mixer. 3,695,587, Cl. 259-41.000.

De Palma, Ted V.: *See—*
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De Stevens, George: *See—*
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De Vac, Inc.: *See—*
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De Vault, Albert N., to Phillips Petroleum Company. Hydrogenation process. 3,696,088, Cl. 260-85.100.

De Werdt, Reinier: *See—*
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De Woody, Charles M., to Ace Glass Incorporated. Flexible pressure-type joint for rigid tubing. 3,695,642, Cl. 285-133.00r.

Dear, Terrence A., to PPG Industries, Inc. Method of severing glass. 3,695,497, Cl. 225-2.000.

Dear, Terrence A., to PPG Industries, Inc. Non-contact thermal cutting. 3,695,498, Cl. 225-1.000.

Deaton, Irving F., to CPC International Inc. Process for the production of a defatted starch conversion product. 3,695,933, Cl. 127-32.000.

Deere & Company: *See—*
Hook, Richard Wayne; and Zaun, Richard David, 3,695,360.

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Scarborough, Alexander A., 3,695,926.

DeFano, Dominic J.; and Kallman, Robert I., to DeFano, Kallman Design, Inc. Lint filter. 3,696,033, Cl. 210-460.000.

DeFano, Kallman Design, Inc.: *See—*
DeFano, Dominic J.; and Kallman, Robert I., 3,696,033.

Deisch, Cecil Winston, to Bell Telephone Laboratories, Incorporated. Peak-to-peak alternating current signal detector. 3,696,253, Cl. 307-235.000.

Delalande S.A.: *See—*
Raynaud, Guy M.; Fauran, Claude P.; Turin, Michel J.; Pourrias, Bernard M.; and Huguet, Gerard J., 3,696,100.

Delbay-Liftfilter Gesellschaft mit beschrankter Haftung: *See—*
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Delmas, Pierre; and Imberi, Pierre. Automatic spectrophotometric absorption analyser. 3,695,764, Cl. 356-97.000.

Demeaux, Jean, to Compagnie des Ateliers et Forges de la Loire (St. Chamond, Fuirminy, St-Etienne, Jacob Holtzer). Method of manufacturing oriented grain magnetic steel sheets. 3,695,946, Cl. 148-111.000.

Dementi, Brian A., to Allied Chemical Corporation. Manufacture of polyethylene terephthalate. 3,696,071, Cl. 260-45.75c.

Demeter, John C., to Gorkovsky Filial Tsentralnogo nauchno-issledovatelskago instituta metallurgii i Svarki. Vehicle warning lamp device. 3,696,334, Cl. 340-134.000.

Deming, Andrew F., to Alliance Manufacturing Company, Inc. Method of making a stator. 3,694,903, Cl. 29-596.000.

Dempsey, Gordon, to Ullrich, Frederick George and Ullrich, Zeala Edna. Lifting devices. 3,695,667, Cl. 294-67.0da.

Deneb Products Engineering: *See—*
Lower, John H.; and Lagus, Peter, 3,695,611.

Denison, Cleo S. Surface oil containment device. 3,695,042, Cl. 61-1.00f.

Dennis, William E.: *See—*
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Dennison Manufacturing Company: *See—*
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Dentonamics Corporation: *See—*
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Desmond, John William, to Westinghouse Electric Corporation. Method for providing a corrugated seal in an elastic fluid machine. 3,694,882, Cl. 29-156.80r.

Desnoyers, Pierre: *See—*
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Desroches, Philip J., to Universal Saddle Hanger, Inc. Locking clamp. 3,695,070, Cl. 70-164.000.

Deutsch Fastener Corporation: *See—*
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Dewey, Ernest A.: *See—*
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Di Rocco, James V., to Gordon Engineering Company. Low level conversion system. 3,696,403, Cl. 340-347.0nt.

Diacel Ltd.: *See—*
Chujo, Kiyoshi; Ishihara, Tetsuo; and Osawa, Hiroshi, 3,695,922.

Dickinson, George Alfred; and Charnock, Harold. Manufacture of float glass. 3,695,859, Cl. 65-99.00a.

Dickopp, Gerhard, to Licentia Patent-Verwaltungs-G.m.b.H. Record disc having elastic deformation by the pickup. 3,696,220, Cl. 179-100.40r.

Dickson, Leon L., Jr.; and Ward, Emmett G. Telemetering drill string with self-cleaning connectors. 3,696,332, Cl. 340-18.0ld.

Didier-Werke AG: *See—*
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Diesel Kiki Kabushiki Kaisha: *See—*

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Dietrich, Werner: *See—*
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Dilgren, Richard E.; and Drinkard, Gary, to Shell Oil Company. Halogenating extraction of oil from oil shale. 3,695,354, Cl. 166-272.000.

Dillon, Brian D.: *See—*
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Dimick,Royal H. Buoyance regulating apparatus for underwater swimming. 3,695,048, Cl. 61-69.000.

Dinges, Karl: *See—*
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Dlugosinski, Theodore: *See—*
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Dockery, Walter E. Self-defrosting windshield with automatically variable transparency. 3,695,681, Cl. 296-97.00f.

Dodson, Thomas Stanley: *See—*
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Doggett, John G., Jr.: *See—*
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Dolen, Cecil W.: *See—*
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Dollenmayer, William L., to International Business Machines Corporation. Miniature disc dictation machine featuring integral disc storage. 3,695,741, Cl. 312-10.000.

Dollenmayer, William L., to International Business Machines Corporation. Miniature disc dictation machine featuring integral disc1 storage. 4,695,741, Cl. 312-10.000.

Domann, Helmut: *See—*
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Domba, Elemer; and Krolikiewicz, Thaddeus A., to Nalco Chemical Company. Hexafluoroisopropanol acrylamide. 3,696,081, Cl. 260-78.5bb.

Dominion Engineering Works, Ltd.: *See—*
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Donadio, Vincent J., to United States of America, Army. Flechette manufacturing machine. 3,695,310, Cl. 140-71.000.

Donaldson Company, Inc.: *See—*
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Donnell, Derrick: *See—*
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Dorris, John P. Drainage catch basins. 3,695,153, Cl. 94-31.300.

Dostal, Zdenek Denny, to International Playtex Corporation. Sanitary tampon. 3,695,270, Cl. 128-285.000.

Douglas, James L.: *See—*
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Dravo Corporation: *See—*
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Dreckmann, Hubert; Wilson, Charles B.; and Wagenblast, Richard K., to Hays Corporation, The. Magnetic non-contact thickness gauge with means to compensate the effects of stray fields on the gauge. 3,696,290, Cl. 324-34.0tk.

Dresser Industries, Inc.: *See—*
Drouet, James M., 3,695,369.

Drinkard, Gary: *See—*
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Drouet, James M., to Dresser Industries, Inc. Earth boring machine with a pivotal head. 3,695,369, Cl. 175-45.000.

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Druth Packaging Corporation: *See—*
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Dunn, Donald P.; and Dunn, Helen T. Hand loom and combination display device. 3,695,303, Cl. 139-34.000.

Dunn, Helen T.: *See—*
Dunn, Donald P.; and Dunn, Helen T., 3,695,303.

Dunn, John Malcolm; and Hornbrook, George Kenneth. Electric alarm screen. 3,696,373, Cl. 340-273.000.

Dupre, Herman K. Waste treatment systems. 3,695,439, Cl. 210-173.000.

Dyanamics Research and Manufacturing, Inc.: *See—*
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Dynamics Corporation of America: *See—*
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Eads, Charles L.; and Brotman, Harry D., to Adams Rite Manufacturing Company. Narrow stile latch-lock structure. 3,695,068, Cl. 70-107.000.

East, Jerry L., to Simplimatic Engineering Co. Automatic bottle packing method and apparatus. 3,694,993, Cl. 53-26.000.

Eastern Company, The: *See—*
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Eastman Kodak Company: *See—*
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Eastwood, Thomas, to Brown, David, Tractors Limited. Synchronizing mechanisms for power transmissions. 3,695,403, Cl. 192-53.00e.

Eberhart, Walter W. Seal for ram. 3,695,149, Cl. 92-168.000.

Eberle, Marcel K. Spiro norbornane 6,9-methanocyclohept(b)indoles. 3,696,118, Cl. 260-326.900.

Eberlein, Wolfgang; Nickl, Josef; Heider, Joachim; Dahms, Gerhard; and Kobinger, Walter, to Boehringer Ingelheim G.m.b.H. Novel cardiac-active principles of the cardenolide glycoside class. 3,696,091, Cl. 260-210.500.

ECC Corporation: *See—*

Krupka, Ronnie W., 3,696,294.
Eccles, Anthony John: *See—*
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Eccles, Anthony John; Mant, Alistair Donald; and Shorthouse, Barry Owen, to Eccles, Anthony John and said Shorthouse and said Eccles assors. to said Mant, Alistair Donald. Monitoring device for vehicle behaviour. 3,695,115, Cl. 73-510.000.
Eckel, Alan. Audiometric survey booth. 3,694,974, Cl. 52-36.000.
Edmondson, John: *See—*
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Edmonston, Robert P.; Lefforge, John W.; and Keller, George C., to Grace, W. R., & Co. Plastisols and gaskets. 3,695,477, Cl. 215-40.000.
Edwards Company, Inc.: *See—*
Parsons, Charles H., 3,696,366.
Edwards, Donald W., to Atlas Chemicals Industries, Inc. Aqueous explosive comprising higher amine, gelling agent and inorganic oxidizer salt. 3,695,947, Cl. 149-2.000.
Edwards, John A., to Syntex Corporation. 18-Lower alkyl 20-ketspregnanes. 3,696,129, Cl. 260-397.300.
Edwards, Leonard Robert: *See—*
Basher, Hedley James; and Edwards, Leonard Robert, 3,695,706.
Egerton, McKenny W., Jr., to Bendix Corporation, The. Digital to synchro converter. 3,696,407, Cl. 340-347.0sy.
Egger, Viktor; Lill, Arnulf; and Metzdorf, Werner, to Siemens Aktiengesellschaft. Method of producing a magnetic layer and resultant product. 3,695,854, Cl. 29-183.500.
Eggers, Robert F.; and Emmons, Donald L., to Rocket Research Corporation. Two-stage hydrazine rocket motor. 3,695,041, Cl. 60-264.000.
Eggert, Heinz; and Schillmann, Ekkehard, to Siemens Aktiengesellschaft. Method of producing a selenium rectifier. 3,694,908, Cl. 29-590.000.
Egnaczak, Raymond K., to Xerox Corporation. Photoelectrophoretic camera. 3,695,755, Cl. 355-3.000.
Egysult Izzolampa es Villamossagi/Reszvenytarsasag: *See—*
Hollo, Imre; Lengyel, Sandor; Hannauer, Milos; and Eross, Bela, 3,695,412.
Ehrenberg, Gustave. Apparatus for cooking foods. 3,695,170, Cl. 99-386.000.
Ehrenreich, A., & Cie: *See—*
Stuck, Klaus, 3,695,650.
Stuck, Klaus, 3,695,651.
Eichelberger, William E. Apparatus for generating characters. 3,696,388, Cl. 340-324.00a.
Eisai Kabushiki Kaisha: *See—*
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Elco Corporation, mesne: *See—*
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Elmore, William C.: *See—*
Walraven, Thomas A.; Maropis, Nicholas; Elmore, William C.; and Devine, Janet, 3,695,500.
Embring, Paul G. Peptizable barium sulfate dentifrice. 3,696,192, Cl. 424-52.000.
Emeis, Reimer, to Siemens Aktiengesellschaft. Method and apparatus for subdividing a crystal wafer. 3,694,972, Cl. 51-319.000.
Emerson Electric Co.: *See—*
Brundage, Robert Wesley, 3,695,791.
Emmons, Donald L.: *See—*
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Emmons, Donald R. Semi-closed rebreathing apparatus. 3,695,261, Cl. 128-142.200.
Endres, Dan D., to Kimberly-Clark Corporation. Laparotomy sheet. 3,695,260, Cl. 128-132.000.
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Feinleib, Julius; and Shaw, Robert F., 3,696,344.
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Engelking, Frederick S.; and Loyd, Calvin D., to Caterpillar Tractor Company. Tube fitting having tapered access opening and closure plug. 3,695,641, Cl. 285-121.000.
Engelsberger, Herbert, to Feldmuhle Aktiengesellschaft. Shrink-on package for stacked goods. 3,695,426, Cl. 206-65.00s.
Engelsher, Harvey J., to Horizon Industries Ltd. Cleansing device for surgical scrubs. 3,694,845, Cl. 15-244.00c.
Engine International Division: *See—*
Klessig, Ernest F., 3,695,366.
England, Michael John; Donnell, Derrick; and Hales, Eric Charles. Vehicle braking system. 3,695,731, Cl. 303-7.000.
Enochian, Samuel H., to Unarco Industries, Inc. Latch operating mechanism for bulkheads. 3,695,656, Cl. 292-36.000.
Erb, George H., to Velcro S.A. Apparatus for manufacturing separable fastener elements. 3,695,976, Cl. 156-435.000.
E.R.D. Corporation: *See—*
Kobayashi, Tatsuo, 3,696,348.
Erdei, Janos: *See—*
Greguss, Pal; Nagy, Sandor B.; Erdei, Janos; and Toth, Lajos, 3,695,825.
Erich, Rosenthal, to Schwartz, G., S. Co. Apparatus for lubricating areas on rotating parts. 3,695,392, Cl. 184-6.280.
Erkfritz, Donald S., to Ingersoll Milling Machine, The. Indexable cutting insert and holder therefor. 3,694,876, Cl. 29-95.000.
Ernst, Max. Turntable for toy and model railroads. 3,695,182, Cl. 104-38.000.
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Errut Products Limited: *See—*
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Esmond, William G., to Becton Dickinson and Company. Pleated membrane transfer device. 3,695,445, Cl. 210-321.000.
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Eurich, Robert C. Tension adjustment for stringed musical instruments. 3,695,137, Cl. 84-312.000.
Evani, Syamalarao: *See—*
Labarge, Robert G.; Evani, Syamalarao; and Hanson, Alden W., 3,696,043.
Evans, Kenneth R. Noise suppressing device for fluid flow lines. 3,695,290, Cl. 137-563.000.
Evans, Theodore D. Hydraulic line fitting support apparatus. 3,695,563, Cl. 248-68.000.
Everett, Thomas David, to Ampex Corporation. Cassette tape assembly. 3,695,553, Cl. 242-199.000.
Ewing, Roy D.; and Rizzone, Michael L., to United States Steel Corporation. Long stroke pumping unit. 3,695,117, Cl. 74-89.220.
Exner, Emil August, to U.S. Philips Corporation. Arrangement including an electronic flash tube. 3,696,268, Cl. 315-151.000.
Export Leaf Tobacco Company: *See—*
Barnett, Joseph; and Smith, John D., 3,695,670.
Fabre, Pierre; Giroud-Garampon Robert; Gondrand, Michel; and Raymond, Fernand, to Tunzini Ameliorain. Method for electrostatic coating of objects with a powder coating material. 3,695,909, Cl. 117-17.500.
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Fahlenberg, Paul, to Compur-Werk Gesellschaft mit beschrankter Haftung & Co. Photographic camera. 3,695,158, Cl. 95-10.0ce.
Fairweather, Ernest Sidney; and Furby, Jim, to Errut Products Limited. Apparatus for treating or digging into surfaces and cutting members for this apparatus. 3,695,722, Cl. 299-39.000.
Farbenfabriken Bayer Aktiengesellschaft: *See—*
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Farnworth, Wilfred, to Rader Pneumatics Incorporated. Apparatus for removing particulate material from gases. 3,695,007, Cl. 55-294.000.
Farr, Emory W., to Waukesha Bearings Corporation. Low capacity, low profile load cell. 3,696,317, Cl. 338-5.000.
Farrar, Ed: *See—*
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Feinleib, Julius; and Shaw, Robert F., to Energy Conversion Devices, Inc. Optical mass memory employing amorphous thin films. 3,696,344, Cl. 340-173.0lm.
Felder, Johann, Jr. Removable extension plate. 3,695,189, Cl. 108-65.000.
Feldhaus, James F., to Minnesota Mining & Manufacturing Company. Magnetic cleaning. 3,695,934, Cl. 134-1.000.
Feldman, Jacob Richard: *See—*
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Fenner, Gunther E., to General Electric Company. Display system utilizing light emitting devices. 3,696,389, Cl. 340-324.00r.
Fenton, Donald M. Nitro or nitroso aromatic composition. 3,696,046, Cl. 252-186.000.
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Ferrentino,Antonio, to Industrie Pirelli Societs per Azioni. Compensating pressure tank for oil-filled power cables. 3,695,297, Cl. 138-30.000.
Ferti-Feeder, Inc.: *See—*
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Fetok GmbH: *See—*
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Fiber Industries, Inc.: *See—*
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Fiedler, Horst; and Fricker, Ludwig, to Daimler-Benz Aktiengesellschaft. Safety installation for the venting and pressure release of closed containers. 3,695,376, Cl. 180-54.00r.
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Filippi, Ernest A.; Watson, Jack B.; and Hughes, Larry E., to United States of America, Navy. Pneumatic machine gun with photo-cell interrupted circuit. 3,695,246, Cl. 124-11.000.
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Finke, Theodore R., to Euclid Products Co., Inc., The. Apparatus for cutting strip material in variable lengths. 3,695,133, Cl. 83-204.000.
Finn, Frederick George, to Post Office, The. Power operated wire wrapping tools. 3,695,309, Cl. 140-124.000.
Firestone Tire & Rubber Company, The: *See—*
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Fisher, James C. Farm wagon steering stabilizer. 3,695,628, Cl. 280-103.000.
Fisons Limited: *See—*
Fitch, Stanley Frederick; and St. John, Dara Derrick Phiroz, 3,696,003.
Fitch, Stanley Frederick; and St. John, Dara Derrick Phiroz, to Fisons Limited. Distillation apparatus. 3,696,003, Cl. 202-160.000.
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Fixler, Jon Scott, to Industrial Patent Development Corporation. Food storage apparatus for use in water-borne vessels. 3,695,208, Cl. 114-211.000.
Flach, Rolf, to Daimler-Benz Aktiengesellschaft. Headrest, especially for seats in motor vehicles. 3,695,700, Cl. 297-408.000.
Flad, Karl. Apparatus for controlling the jacks of knitting machines. 3,695,060, Cl. 66-75.000.
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Forestal, Robert J.; and Hanley, Jack W., to Forestal Enterprises. Collapsible ladder assembly. 3,695,389, Cl. 182-22.000.
Forgione, Peter Salvatore; and Smyth, Nelda Marjorie. Isolation of enzymes from aqueous media by means of polyanions. 3,695,999, Cl. 195-63.000.
Fossum, Lars; and Wangberg, Lennart, to International Standard Electric Corporation. Conversion device for data presentation on television screens. 3,696,392, Cl. 340-324.00a.
Foster, Alan, to U.S. Philips Corporation. Bilateral, gate-controlled semiconductor device. 3,696,273, Cl. 317-235.00r.
Foster, John A.; and Filipowicz, Carl A., to Clark, J. L., Manufacturing Co. Hinged plastic closure for sheet metal cans. 3,695,481, Cl. 220-315.000.
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Frank, William C., to Hyde Park Farm Supply Limited. Poultry crates. 3,695,232, Cl. 119-17.000.
Franke, Raymond C.; and Dufer, William B., to Westinghouse Air Brake Company. Acknowledging circuit arrangement. 3,696,356, Cl. 340-213.100.
Frankenberg, Henry E., to Continental Can Company, Inc. Method and apparatus for making corrugated crown caps. 3,695,201, Cl. 113-121.00a.
Freeman, Donald J.; Fulkerson, Ambrose A.; Grall , Kenneth J.; and Pearson, Samuel J., to United States of America, Army. Black smoke marker. 3,695,949, Cl. 149-15.000.
Freeman, Norman H.: *See—*
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French, Elbert E.; and Parker, Robert W. Slidable pin-locking tool. 3,695,102, Cl. 73-141.00r.
Frezzotti, Armando, to Fibrostamps S.n.l. Papermaking machine shaping cylinder having trapezoidal-shaped peripheral trough-like boxes. 3,695,996, Cl. 162-273.000.
Frick, Hughie R.: *See—*
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Friedman, David; and Segal, Bernard Mortimer, to Singer Company, The, mesne. Response system with common circuitry for multiple functions. 3,694,935, Cl. 35-48.00r.
Friedrich, Howard R., to Hughes Aircraft Company. Laser lens cooling and cleaning system. 3,696,230, Cl. 219-121.00l.
Friesz, Rheinhardt. Classifying separator for unpoured, flowable rock-gravel, sand and cement slurry mixture from concrete mixer. 3,695,427, Cl. .
Frix, Lee R., to Volunteer Enterprises, Inc. Firing mechanism for semiautomatic firearms. 3,695,143, Cl. 89-145.000.
Frost, Wade W., to Oxford Industries, Inc. Top stitch collar stacker method and apparatus. 3,695,195, Cl. 112-121.290.
Fuchs, Werner; and Merger, Franz. Purification of 2,2-dimethyl-1,3-propanediol monohydroxypivalic ester by distillation with sulphuric of sulphonic acid. 3,696,005, Cl. 203-35.000.
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Futterer, Bodo, to Gillette Company, The, mesne. Electrodeposition process for producing perforated foils with raised portions at the edges of the holes. 3,695,927, Cl. 117-212.000.
Gaiser, Floyd E. Bonding tool. 3,695,502, Cl. 228-4.000.
Gajewski, Wieslaw, to Vapor Corporation. Impending condensation alarm. 3,696,360, Cl. 340-235.000.
Gale, David M., to Du Pont de Nemours, E. I., and Company. Cyclobutene homopolymers and copolymers. 3,696,080, Cl. 260-78.500.
Gannaway, Edwin L., to Copeland Refrigeration Corporation. Compressor and method of lubrication. 3,695,786, Cl. 417-437.000.
Gantt, Kenneth T. Burglar alarm fixed to door or the like. 3,695,212, Cl. 116-8.000.
Garehime, Jacob W., Jr. Cavity head screw and driving tool therefor. 3,695,321, Cl. 145-50.000.
Garfield, James L., to Steel Company of Canada, Limited, The. Axial thrust spinning head for rotating dies. 3,695,083, Cl. 72-285.000.
Garland Manufacturing Company: *See—*
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Garrison, Robert A.; and Conapa, Leonard L., to Garrison Manufacturing Co., Inc. Cylinder for power steering system with releasable hydraulic stops. 3,695,378, Cl. 180-79.20r.
Garth, Bruce Hollis, to Du Pont de Nemours, E. I., and Company. Perfluoropolyether esters of quinones. 3,696,128, Cl. 260-376.000.
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Gartner, Karl. Extrusion press for the manufacture of light metal profiles. 3,695,081, Cl. 72-254.000.
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Gauzza, Harry J.; and Horanoff, Eugene V., to United States of America, Navy. Hinged stability and control fin assembly. 3,695,556, Cl. 244-3.290.
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Eberlein, Wolfgang; Nickl, Josef; Heider, Joachim; Dahms, Gerhard; and Kobinger, Walter, 3,696,091.
Heimann, Alfred, to Kochs Adlernahmaschinenwerke AG. Template follower mechanism. 3,695,194, Cl. 112-121.150.
Heinge, Richard: *See—*
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Helbig, Jim D., to Cyclo Manufacturing Company. Submerged vessel raising apparatus. 3,695,203, Cl. 114-50.000.
Held, Edward C., Jr., to Phillips Petroleum Company. Apparatus for vacuum forming hollow articles from two sheets of thermoplastic material. 3,695,799, Cl. 425-109.000.
Hellerbach, Joseph; and Szente, Andre. (1,3) Oxazino (3,2-D) (1,4) benzodiazepine derivatives and process for the preparation thereof. 3,696,095, Cl. 260-239.30t.
Hellermann, Paul, G.m.b.H.: *See—*
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Helms, Horace H., Jr.; and Rozner, Alexander G., to United States of America, Navy. Pyrotechnic composition. 3,695,951, Cl. 149-19.000.
Helmut, Klapp: *See—*
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Henkel & Cie G.m.b.H.: *See—*
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Hennig, Karl-Friedrich; Reinecke, Erich; Merz, Herbert; Werner, Egon; Isernhagen, Fritz; Holthusen, Erwin; and Klatt, Alfred, to Westinghouse Bremsen und Apparatebau G.m.b.H. Anti-wheel slide apparatus for vehicles. 3,695,734, Cl. 303-21.00f.
Hercules Incorporated: *See—*
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Herring, James M., Jr., to Budd Company, The. Lateral car stabilizing system. 3,695,186, Cl. 105-171.000.
Herron, Rand E.; and Olich, Jack M., to Technicon Instruments Corporation. Burner construction for flame spectrophotometer and system therefor. 3,695,812, Cl. 431-90.000.
Hertz, Carl Hellmuth; and Lindstrom, Kjell O. T. Method of measuring the level of a material in a tank, and an apparatus for practicing this method. 3,695,107, Cl. 73-290.00r.
Herubel, Jean-Frederic, to Schlumberger, N., & Cie. Device with flexible elements for processing textile fibres. 3,694,860, Cl. 19-236.000.
Herzer, Kurt, Firma: *See—*
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Herzhoff, Peter; Gref, Hans; and Platz, Stephan, to Agfa-Gevaert Aktiengesellschaft. Apparatus for coating tapes, sheets and the like with viscous solutions using the air-brush principle. 3,695,218, Cl. 118-50.000.
Hesling, Donald M.: *See—*
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Hetman, Frank W.; and Johnson, Donald I., to De Vac, Inc. Device for automatically cleaning a window sash. 3,694,847, Cl. 15-302.000.
Hewitt, Gordon Trent; and Giordano, Annie Sue, to Colgate-Palmolive Company. Mixed alkanolamide fabric softening compositions. 3,696,034, Cl. 252-8.800.
Heyl & Patterson, Inc.: *See—*
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Hiatt, Norman A.: *See—*
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Hibbs, Eugene B., Jr. Analog to digital converter. 3,696,405, Cl. 340-347.0ad.
Highfield, Peter Edward; and Hill, Gordon John, to British Vis-ueen Limited. Plastics web slitting and sealing. 3,695,969, Cl. 156-251.000.
Hilbig, Jack H., to Rohr Corporation. Sound suppression system for fan jet engines. 3,695,387, Cl. 181-33.0hc.
Hill, Donald E.: *See—*
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Hill, Gordon John: *See—*
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Hill, John A.; and La Via, Anthony L., to Squibb, E. R., and Sons, Inc. Sweetening compositions containing saccharin and dipeptides. 3,695,898, Cl. 99-141.00a.
Hill, Robert E., to Koppers Company, Inc., mesne. Esthetic wood product. 3,695,920, Cl. 117-69.000.
Hiller, Gary L.; Ulbing, Cynthia G.; and Starr, John E., to Eastman Kodak Company. Photographic supersensitized silver halide emulsions. 3,695,888, Cl. 96-123.000.
Hippel, Hans: *See—*
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Hirakawa, Kanehiro. Apparatus for production of castella or soft cake. 3,695,905, Cl. 99-356.000.
Hirokawa, Yoichi; and Masuzawa, Isao, to Kabushikikaisha Tokyo Keiki Seizosho (Tokyo Keiki Seizosho Co., Ltd.). Marine autopilot system including mode engagement features. 3,696,282, Cl. 318-588.000.
Hirs, Gene; and Wykoff, Richard H., to Hydromation Filter Company. Method of filtering a mixture of liquid and fibrous solid contamenants. 3,695,433, Cl. 210-67.000.
Hirschfeld, Tomas. Hydrocarbon detector. 3,695,847, Cl. 23-232.00r.
Hirtz , Hans; and Hirtz, Hanns Joachim. Inhalator for moist air. 3,695,267, Cl. 128-192.000.
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Hochheiser, Jerome S.; and Zermeno, Louis, to Hochheiser Electronics Corporation. Air processor. 3,696,269, Cl. 317-262.0ae.
Hocking, Homer Douglas. Expansible carton. 3,695,508, Cl. 229-38.000.
Hodges, John. Plastic garbage bag holder and sealer. 3,695,565, Cl. 248-97.000.
Hoefnagels, Jan Antonius; Hiatt, Norman A.; and Smets, Georges Joseph, to Gevaert-Agfa N.V. Photochromic polycondensates of the indolinospiropyran type. 3,696,098, Cl. 260-240.00r.
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Hoffman, Paul; and Craig, Herbert W., to Hudson Pulp & Paper Corporation. Remoistening adhesive compositions. 3,696,065, Cl. 260-17.4st.
Hoffmann, Gunther; and Zabel, Bernd, to Wandel u. Goltermann. Pulse-frequency tester. 3,696,293, Cl. 324-78.00q.
Hoffmann, Louis Adolph. Apparatus for injecting treatment fluids into meats and the like. 3,695,166, Cl. 99-257.000.
Hogg, William J.; Jackson, Charles A.; Harvin, Septimus A.; and Whitesel, Joseph C., to Thiokol Chemical Corporation. Woven article as a carpet scrim. 3,695,983, Cl. 161-71.000.
Hogrebe, Herbert C., to Dazor Manufacturing Corporation. Wall bracket base assembly. 3,695,568, Cl. 248-223.000.
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Holland, James F. Low silhouette antenna. 3,696,431, Cl. 343-713.000.
Hollander, Frans, to Koninklijke Nederlandsche Hoogovens En Staalfabrieken N.V. Method and apparatus for operating a pusher type furnace. 3,695,594, Cl. 263-6.00r.
Holley Carburetor Company: *See—*
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Hollinger, Harvey T. Tray dispenser. 3,695,484, Cl. 221-296.000.
Hollo, Imre; Lengyel, Sandor; Hannauer, Milos; and Eross, Bela, to Egysult Izzolampa es Villamossagi/Reszvenytarsasag. Device for rendering uniform the feed of incandescent filaments of light sources. 3,695,412, Cl. 198-34.000.
Holthusen, Erwin: *See—*

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Hori, Kikuo; Yamada, Hiroshi; and Itoh, Hiroshi, to Teijin Limited. Traverse device in package winding apparatus. 3,695,529, Cl. 242-26.300.

Hori, Kiyokazu; Kose, Tatsuo; and Ochi, Kazuo, to Daiwa Bosiki Kabushiki Kaisho. Automatic yarn piecing apparatus for spindleles spinning machine. 3,695,017, Cl. 57-34.00r.

Horike, Akihiro: *See—*
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Horizon Industries Ltd.: *See—*
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Horn, John M., to Allis-Chalmers Manufacturing Company. Piston position monitor. 3,695,145, Cl. 91-390.000.

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Horne, Richard J. Cutting stick spacer. 3,695,136, Cl. 83-658.000.

Hoshi, Juro, to Nippon Gakki Seizo Kabushiki Kaisha. Tuning indicating apparatus for FM receiver. 3,696,301, Cl. 325-398.000.

Hoshino, Masahiro; and Sasaki, Kenkichi. Sealing method of sealed segments of a tunnel. 3,695,044, Cl. 61-42.000.

Hosoda, Kirokuro; Shiina, Naonori; Kadowaki, Yoshio; and Nakae, Hiroyuki, to Furukawa Electric Company Limited, The. Process for preparing olefin polymer foams. 3,696,059, Cl. 260-2.50h.

Hosokawa, Etsuo: *See—*
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Howe, Clarence H. Animal identification tag and installation tool therefor. 3,694,949, Cl. 40-301.000.

Howe, Wilson S. Quick connect coupler. 3,695,139, Cl. 85-33.000.

Howland, Robert W.; Minnich, George E.; and Van Fleet, Richard L., to Singer Company, The, mesne. Instrument drive signals. 3,694,930, Cl. 35-12.00f.

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Hulsmann, Hans Leo; Renckhoff, Gustav; and Pastura, Albino, to Dynamit Nobel Aktiengesellschaft. Process for the production of methyl benzoate. 3,696,141, Cl. 260-476.00r.

Hum, Allen S., to General Mills, Inc. Method of glazing hard candy coatings. 3,695,894, Cl. 99-134.00r.

Humlong, Robert F., to Wald Manufacturing Company, Incorporated. Bicycle basket. 3,695,496, Cl. 224-36.000.

Hummel, Heinz; and Gortz, Herbert, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Device for measuring the solidification temperature of liquids. 3,695,093, Cl. 73-17.000.

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Hutchinson, Herman R.; Arpajian, Vasken F.; and Malcomson, Robert S., to Pennwalt Corporation. Time monitored injection molding process control apparatus. 3,695,800, Cl. 425-146.000.

Hwa, Jesse C. H., to Stauffer Chemical Company. Polymercaptan modified vinyl halide polymers. 3,696,083, Cl. 260-79.000.

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Inamdar, Sayed-Ibrahim S., to Bechtel International Corporation, mesne. Ground fault detection circuit. 3,696,367, Cl. 340-255.000.

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Ingerson, Philip F., to Avoset Food Corporation. Emulsifier system for substitute dairy products. 3,695,889, Cl. 99-63.000.

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Institut Francais du Petrole, des Carburants et Lubrifiants: *See—*
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International Technidyne Corporation: *See—*
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Ishida, Hideo, to Nissan Motor Company, Limited, Fuji Kiko Company, Limited and Ikeda Bussan Company, Limited. Adjustable reclining seat. 3,695,570, Cl. 248-397.000.

Ishida, Shinichi; Yano, Nobumitsu; Ohshima, Noboru; Fukuda, Hiromichi; and Sato, Takeshi, to Asahi Kasei Kogyo Kabushiki Kaisha. Stabilized polymer compositions. 3,696,170, Cl. 260-858.000.

Ishida, Takashi, to Mikuni Kogyo Co., Ltd. Fuel supply system for internal combustion engines. 3,695,245, Cl. 123-140.0mc.

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Ito, Yoshiyuki; and Aihara, Toru, to Caterpillar Mitsubishi Ltd. Method of remote control of tractors. 3,695,377, Cl. 180-66.00b.

Itoh, Hiroshi: *See—*
Hori, Kikuo; Yamada, Hiroshi; and Itoh, Hiroshi, 3,695,529.

Iverson, Iver H. Fluid pressure engine. 3,695,792, Cl. 418-176.000.

Iwan, Wilfred D.: *See—*
George, David J.; and Iwan, Wilfred D., 3,695,767.

Iwano, Haruhiko: *See—*
Yamamoto, Nobuo; Hatano, Tadao; Shimamura, Isao; and Iwano, Haruhiko, 3,695,883.

Iwatsuki, Makoto: *See—*
Akamatsu, Akira; Takagi, Yasuo; Iwatsuki, Makoto; Kida, Yoko; and Takeshita, Kazuhisa, 3,695,822.

Izuta, Tadao, to Nippon Gakki Seizo Kabushiki Kaisha. Vibration dampening core for an archery bow. 3,695,248, Cl. 124-30.00r.

J. Strobel & Soehne, Spezial-Naehmaschinen-Fabrik: *See—*
Rau, Winfried, 3,695,197.

Jacksch, Bruno, to W & M Automation Karl Muller, Firma. Conveyor track for rolling articles with spaced catches. 3,695,408, Cl. 193-40.000.

Jackson, Byron, Inc.: *See—*
Langowski, Faustyn C., 3,695,669.

Jackson, Charles A.: *See—*
Hogg, William J.; Jackson, Charles A.; Harvin, Septimus A.; and Whitesel, Joseph C., 3,695,983.

Jackson, Harold Ernest, to Petrol Injection Limited. Fuel injector devices. 3,695,518, Cl. 239-533.000.

Jacobowsky, Armin: *See—*
Wirtz, Peter; Jacobowsky, Armin; and Mittler, Werner, 3,696,015.

Jacobs, Joh., & Co.: *See—*
Schmidt, Ernst G. F. H.; Walkowsky, Bernhard; Grote, Wilfried Christoph; and Janssen, Matthias (said Schmidt, said Walkowsky, and said Grote assors. to), 3,695,167.

Jacobs, William A. Extruding and filling containers made of foamed thermoplastic polymer. 3,696,179, Cl. 264-45.000.

Jacobsson, Jan Roland, to Aga Aktiebolag. Vapor deposition apparatus. 3,695,217, Cl. 118-49.500.

Jacques, Maison-Alfort: *See—*
Le Page, Madeleine A.; Beau, Raymond; and Jacques, Maison-Alfort, 3,696,053.

Jaffe, Joseph: *See—*
Chessmore, Donald O.; and Jaffe, Joseph, 3,696,025.

Jager, Albert: *See—*
Munch, Gerhard; and Jager, Albert, 3,695,600.

Jagers, Leopold, to Trennjager Maschinenfabrik. Circular saw construction. 3,695,135, Cl. 83-455.000.

Jamison, Samuel J., to Johnson & Johnson. Fitted bed sheet. 3,694,832, Cl. 5-334.000.

Jansen, Gert; and Clauson-Kaas, Niels, to Ciba-Geigy Corporation. Process for the production of salts of 5-formyl furan-2-sulphonic acid. 3,696,125, Cl. 260-347.200.

Janssen, Elizabeth Charlotte: *See—*
Schmidt, Ernst G. F. H.; Walkowsky, Bernhard; Grote, Wilfried Christoph; and Janssen, Matthias, 3,695,167.

Janssen, Matthias: *See—*
Schmidt, Ernst G. F. H.; Walkowsky, Bernhard; Grote, Wilfried Christoph; and Janssen, Matthias, 3,695,167.

Jansson, Birger F., to Case, J. I., Company. Balancing mechanism for fluid translating device. 3,695,789, Cl. 418-75.000.

Japan Steel Works, Ltd.: *See—*
Kobayashi, Sakae; Hori, Hiroshi; and Matsunaga, Toshio, 3,695,527.
Taki, Toshio; and Matsunaga, Toshio, 3,695,528.

Javet, Alain Ferdinand, to Termomeccanica Italiana S.p.A., mesne. Centrifugal separator for separating emulsions. 3,695,509, Cl. 233-30.000.

Jeanmart, Claude; and Messer, Mayer Naoum, to Rhone-Poulenc S.A. 1-(2-Aminocarbonyloxyethyl)-5-nitro-imidazole derivatives having antiprotozol activity. 3,696,116, Cl. 260-309.000.

Jelinek, Jerry G.; and Reinsch, Edward, to Parker-Hannifin Corporation. Method of inserting a seal in a face-cut groove. 3,694,894, Cl. 29-451.000.

Jentsch, Dietrich, to Dorken & Mankel, KG. Mounting for built-in door-closing arrangement. 3,694,852, Cl. 16-129.000.

Jespersen, Hans Jorgen, to Danfoss A/S. Valve, particularly a thermostatic expansion valve for refrigerating equipment. 3,695,577, Cl. 251-61.400.

JFD Electronics Corporation: *See—*
Grant, Ronald D., 3,696,437.

Jochems, Pieter Johannes Wilhelmus; and De Werdt, Reinier. Method of manufacturing an electric device e.g. a semiconductor device. 3,695,955, Cl. 156-11.000.

Joelson, Carl R. Method for producing concrete pipe. 3,696,182, Cl. 264-72.000.

Johansson, Rolf Ingvar. Device for separating liquid from a slurry. 3,695,448, Cl. 210-394.000.

Johns-Manvill Corporation: *See—*
Genson, Samuel Richard; Petersen, Svend Aage; and Currier, Robert Lee., 3,695,523.

Johns-Manville Corporation: *See—*
Chung, Jerome; and Shiuh, Hsuing, 3,695,763.
Current, John Marvin; and Smalley, Rodney Roger, 3,695,965.
Yang, Julie Chi-Sun, 3,695,836.

Johnson & Johnson: *See—*
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Malaney, Frank E., 3,695,269.

Johnson, Anderson Forbes, Jr.: *See—*
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Johnson, Carl W.: *See—*
Voss, Joseph A.; and Johnson, Carl W., 3,695,970.

Johnson, Derwyn C.: *See—*
Beaulieu, Alexander J.; and Johnson, Derwyn C., 3,696,307.

Johnson, Donald I.: *See—*
Hetman, Frank W.; and Johnson, Donald I., 3,694,847.

Johnson, Donald L. Method for improved production of wood flakes. 3,695,320, Cl. 144-326.000.

Johnson, Keith M.: *See—*
Parker, John C.; and Johnson, Keith M., 3,694,958.

Johnson, Rodney D.: *See—*
Mogilner, Geoffrey A.; and Johnson, Rodney D., 3,695,617.

Johnson, Roger L.: *See—*
Buschbom, Floyd E.; and Johnson, Roger L., 3,695,234.

Johnson, Waldoio, to Georgia-Pacific Corporation. Modular window unit. 3,694,961, Cl. 49-414.000.

Jones, Charles. Housing sealing means for rotary engines. 3,695,790, Cl. 418-83.000.

Jones, Charles E.: *See—*
Bryant, Michael I.; and Jones, Charles E., 3,695,326.

Jones, Clifford V.: *See—*
Walk, George A.; and Jones, Clifford V., 3,695,603.

Jones, Kenneth W., to Hycalog, Inc. Drilling apparatus. 3,695,370, Cl. 175-106.000.

Jones, Oliver: *See—*
Davies, Philip Hywel; Hobden, Maurice Vernon; Hulme, Kenneth Fraser; and Jones, Oliver, 3,696,038.

Jones, Robert Louis, to Safety Lift Corporation. Safety brake unit for a mine cage. 3,695,396, Cl. 187-89.000.

Jones, Viron V., to Keuffel & Esser Company. Photoimaging material comprising polyamide. 3,695,887, Cl. 96-115.00r.

Jorgensen, Arnold J.: *See—*
King, Chia-Cheng; Jorgensen, Arnold J.; and Behr, Michael I., 3,696,255.

Josephson, Edgar F.: *See—*
Coyle, Edward L.; Josephson, Edgar F.; and Schipper, Dennis J., 3,694,925.

Jossick, James L., to Conn. Engineering Assoc. Corporation. Production of powdered metal. 3,695,795, Cl. 425-7.000.

Jud, Karl, to Ruti Machinery Works, Ltd. Method and apparatus for producing a terry fabric on a loom. 3,695,302, Cl. 139-27.000.

Judy, Peter Frederick; Hudyma, Thomas William; and Partyka, Richard Anthony, to Bristol-Myers Company. Benzocyclobutene-1-carboxylic acids. 3,696,111, Cl. 260-293.510.

Jullien-Davin, Jean, to Crouzet. Automatic mold for parts of plastic material. 3,695,572, Cl. 249-68.000.

Jungel, Heinrich, to Fried. Krupp Gesellschaft mit beschrankter Haftung. Internally vibrated roller cutter apparatus for cutting and rock. 3,695,721, Cl. 299-37.000.

Jungkind, Roland, to Marker, Hannes. Toe iron for safety ski bindings. 3,695,624, Cl. 280-11.35t.

Kabbe, Hans-Joachim; and von Konig, Anita, to Agfa-Gevaert Aktiengesellschaft. Process for the production of photographic images. 3,695,880, Cl. 96-52.000.

Kabel, Heinrich, to Hellermann, Paul, G.m.b.H. Tool for tieing bundles of cables. 3,695,308, Cl. 140-93.400.

Kabushiki Kaisha: *See—*
Kurasawa, Makoto, 3,695,753.

Kabushiki Kaisha Komatsu Seisakusho: *See—*
Kita, Masaaki, 3,695,090.

Kabushiki Kaisha Meiki Seisakusho: *See—*
Kaji, Seiho, 3,695,464.

Kabushiki Kaisha Rinnai Seisakusho: *See—*
Mizutani, Katsushi, 3,695,818.

Kabushiki Kaisha Suwa Seikosha: *See—*
Fujimori, Motoyuki, 3,695,033.

Kabushiki Kaisha Toyota Chuo Kenyu Sho: *See—*
Hayashi, Yasutaka; and Arakawa, Hideo, 3,695,023.

Kabushikikaisha Tokyo Keiki Seizosho (Tokyo Keiki Seizosho Co., Ltd.): *See—*
Hirokawa, Yoichi; and Masuzawa, Isao, 3,696,282.

Kachioff, Yuval: *See—*
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Kadowaki, Yoshio: *See—*
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Kagimoto, Syozo: *See—*
Okuda, Kazuo; and Kagimoto, Syozo, 3,695,601.

Kahn, Leonard R.; and Gordon, Robert R., to Kahn Research Laboratories, Inc. Audio signal transmission system and method. 3,696,298, Cl. 325-59.000.

Kahn Research Laboratories, Inc.: *See—*
Kahn, Leonard R.; and Gordon, Robert R., 3,696,298.

Kaiho, Isao; Shimizu, Hiroshi; and Osuka, Hiroshi, to Nihon Polystrene Kabushiki Kaisha. Process for preparing styrene polymers having a high impact strength. 3,696,172, Cl. 260-880.00r.

Kaji, Seiho, to Kabushiki Kaisha Meiki Seisakusho. Transfer mechanism for the sheet material of a multiplaten press. 3,695,464, Cl. 214-16.600.

Kalb, Henry T.: *See—*
Crosswy, Frank L.; and Kalb, Henry T., 3,695,761.

Kalish, Robert L.: *See—*
Shaines, Alfred; Kalish, Robert L.; and Hamer, Edward A. G., 3,695,964.

Kalle Aktiengesellschaft: *See—*
Lind, Heinrich; Mahl, Hans; and Beer, Ekkehard, 3,695,972.

Kallman, Robert I.: *See—*
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Kalner, Veniamin Davidovich; Orlovsky, Anatoly Georgievich; Ostrovsky, Grigory Arkadievich; Ryskind, Alexandr Moiseevich; Semenov, Viktor Nikolaevich; Stepin, Anatoly Loginovich; Surov, Mikhail Andreevich; Shepelyakovsky, Konstantin Zakharovich; and Shklyaov, Isaak Nakhimovich, to Moskovsky dvazhdy ordena Lienina i ordena Trudovogo Krasnogo Znameni Avtomabilny Zavod imeni I.A. Likhacheva. Apparatus for thermal treatment of metal parts by electric induction heating. 3,696,225, Cl. 219-10.790.

Kamioka, Toshiharu: *See—*
Tachikawa, Ryuji; Takagi, Hiromu; Kamioka, Toshiharu; Fukunaga, Mitsunobu; Kawano, Yoichi; and Miyadera, Tetsuo, 3,696,094.

Kanai, Kenji: *See—*
Sugaya, Hiroshi; and Kanai, Kenji, 3,696,216.

Kandelaki, David Georgievich; Chargeishvili, Tengiz Sergeevich; and Skvortsov, Georgy Alexandrovich. Device to produce non-woven continuous ribbons from threads. 3,695,977, Cl. 156-441.000.

Kandler, Georg: *See—*
Westphal, Bernd; and Kandler, Georg, 3,695,777.

Kane, Robert R.; and Glaser, Charles J., Jr., to Fisher Controls Company, Inc. Reinforced boot for slurry type pinch valve. 3,695,576, Cl. 251-5.000.

Kaplan, Martin; Hansen, Donald E.; and Quist, Eric G., to Mosler Research Products, Inc. Security alarm system. 3,696,376, Cl. 340-276.000.

Kapp, Ludwig J., to Flo Devices Inc. Serial printing machine. 3,695,410, Cl. 197-55.000.

Kardas, Alan: *See—*
Rohrs, Marvin K.; Neary, Robert J.; Rosenberg, Robert B.; Kardas, Alan; and Staats, William R., 3,695,250.

Karr, Robert J. Method and apparatus for applying or removing gloves. 3,695,493, Cl. 223-111.000.

Kartschmaroff, Peter; and Moser, Paul, to Ciba-Geigy Corporation. Process for the production of nickel salts of monoesters of 3,5-ditert. butyl-4-hydroxybenzyl phosphonic acid. 3,696,135, Cl. 260-439.00r.

Kashio, Toshio, to Casio Computer Kabushiki Kaisha. Method and arrangement for generating tracing signals. 3,696,394, Cl. 340-324.00a.

Kaske, Alan D.; and Sauter, Gerald F., to Sperry Rand Corporation. Block organized random access memory. 3,696,349, Cl. 340-174.0nc.

Kastan, Howard; and Pena, Joe C., to Lockheed Aircraft Corporation. Rotor system including a blade retention member. 3,695,779, Cl. 416-135.000.

Katuta, Tadao, to Tokyo Shibaura Electric Co., Ltd. Apparatus for embedding metal pins in a glass panel. 3,695,860, Cl. 65-154.000.

Kauffman, Ray B. Radio frequency burglar alarm system. 3,696,368, Cl. 340-258.00a.

Kaufman, Vern F.; Klose, Alvin A.; and Pool, Morris F., to United States of America, Agriculture. Method of defeathering poultry. 3,694,856, Cl. 17-47.000.

Kawamata, Masao: *See—*
Kitagawa, Tadashi; Yaguchi, Shoichiro; Yamanobe, Katsuyuki; and Kawamata, Masao, 3,696,316.

Kawamata, Motoo: *See—*
Watanabe, Hiroo; Yamamoto, Koosuke; Abe, Takeshi; and Kawamata, Motoo, 3,695,830.

Kawano, Shigeru: *See—*
Oishi, Hiroshi; Aoki, Fumio; Kawano, Shigeru; Muramaisu, Hitoshi; and Saeki, Masahiro, 3,696,383.

Kawano, Takuo. Fasteners for attaching umbrella clothes to rib. 3,694,864, Cl. 24-73.0pf.

Kawano, Yoichi: *See—*
Tachikawa, Ryuji; Takagi, Hiromu; Kamioka, Toshiharu; Fukunaga, Mitsunobu; Kawano, Yoichi; and Miyadera, Tetsuo, 3,696,094.

Kazarinov, Igor Borisovich: *See—*
Khripkov, Alexandr Vasilievich; Shenderov, Lev Borukhovich; and Kazarinov, Igor Borisovich, 3,695,334.

Kearns, Tommy Carter; and Kim, Yang Joo. Ammonium polyphosphate manufacture. 3,695,835, Cl. 423-310.000.

Keith, Donald George; Maack, Horst Egon Fred Ludwig; and Morris, Douglas Barrett, to Imperial Chemical Industries, Limited. Method

of making spiral wound plastic foam tube. 3,695,959, Cl. 156-79.000.

Keith, Marvin W., Jr. Flexible link rotatable drive coupling. 3,695,058, Cl. 64-23.000.

Kell, Robert Christopher; Rendle, David Forbes; and Riches, Eric Edward, to General Electric Company Limited, (formerly the General Electric and English Companies Limited). Microwave devices. 3,696,314, Cl. 333-73.00w.

Keller, George C.: *See—*
Edmonston, Robert P.; Lefforge, John W.; and Keller, George C., 3,695,477.

Kelley Company, Inc.: *See—*
Potter, Roderick B., 3,696,240.

Kelly, Joseph L, Jr., to Hughes Tool Company. Rotary shaft drilling apparatus. 3,695,363, Cl. 173-43.000.

Kelsey-Hayes Company: *See—*
Ayers, David T., Jr., 3,695,730.
Stelzer, William, 3,695,732.

Kemper, Arthur L.; and Baliklock, Raymond R., to Collins Radio Company. ADF needle stabilizing circuit. 3,696,428, Cl. 343-117.004.

Kennametal Inc.: *See—*
Kennicott, Wilbur L.; and Heaton, James W., 3,694,879.
Kita, John F.; and Heaton, James W., 3,695,723.

Kennecott Copper Corporation: *See—*
Walk, George A.; and Jones, Clifford V., 3,695,603.

Kennicott, Wilbur L.; and Heaton, James W., to Kennametal Inc. Tool holder and method of using. 3,694,879, Cl. 29-96.000.

Kerns, Clyde W.: *See—*
Guinzy, Norman J.; Kerns, Clyde W.; Ruehle, William H.; and Teague, Henry E., 3,696,331.

Kerr, Glenn D.: *See—*
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Kerr-McGee Chemical Corporation: *See—*
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Kessinger, Orville E., Jr.: *See—*
Alexander, George F.; Kessinger, Orville E., Jr.; Rediger, John R.; and Reinsma, Harold L., 3,695,737.

Keuffel & Esser Company: *See—*
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Keyes Fibre Company: *See—*
Crabtree, Kenneth L., 3,695,479.

Khaidurov, Leonid Konstantinovich: *See—*
Bolotin, Evgeny Moiseevich; Ierusalimsky, Boris Nikolaevich; Ostrovsky, Igor Semenovich; Razmerov, Vladimir Ivanovich; Ratin, Valentin Isidorovich; Rivilis, Mikhail Evseevich; Saveliev, Leonid Ivanovich; Khaidurov, Leonid Konstantinovich; Khodosh, VladimirAlexandrovich; and Pisarev, Nikolai Dmitrievich, 3,695,720.

Khaidurov, Leonid Konstatinovich: *See—*
Bolotin, Evgeny Moiseevich; Ierusalimsky, Boris Nikolaevich; Ostrovsky, Igor Semenovich; Razmerov, Vladimir Ivanovich; Ratin, Valentin Isidorovich; Rivilis, Mikhail Evseevich; Saveliev, Leonid Ivanovich; Khaidurov, Leonid Konstatinovich; Khodosh, Vladimir lexandrovich; and Pisarev, Nikolai Dmitrievich, 3,695,719.

Khodosh, Vladimir Alexandrovich: *See—*
Bolotin, Evgeny Moiseevich; Ierusalimsky, Boris Nikolaevich; Ostrovsky, Igor Semenovich; Razmerov, Vladimir Ivanovich; Ratin, Valentin Isidorovich; Rivilis, Mikhail Evseevich; Saveliev, Leonid Ivanovich; Khaidurov, Leonid Konstatinovich; Khodosh, Vladimir lexandrovich; and Pisarev, Nikolai Dmitrievich, 3,695,719.

Bolotin, Evgeny Moiseevich; Ierusalimsky, Boris Nikolaevich; Ostrovsky, Igor Semenovich; Razmerov, Vladimir Ivanovich; Ratin, Valentin Isidorovich; Rivilis, Mikhail Evseevich; Saveliev, Leonid Ivanovich; Khaidurov, Leonid Konstantinovich; Khodosh, VladimirAlexandrovich; and Pisarev, Nikolai Dmitrievich, 3,695,720.

Khripkov, Alexandr Vasilievich; Shenderov, Lev Borukhovich; and Kazarinov, Igor Borisovich. Method and apparatus for casting with revolving magnetic field controlling pouring. 3,695,334, Cl. 164-49.000.

Kida, Yoko: *See—*
Akamatsu, Akira; Takagi, Yasuo; Iwatsuki, Makoto; Kida, Yoko; and Takeshita, Kazuhisa, 3,695,822.

Kiel, Othar M.: *See—*
Wood, Donald B.; and Kiel, Othar M., 3,695,355.

Kilby, Jack S.; and Van Tassel, James H., to Texas Instruments, Incorporated. Keyboard encoder. 3,696,411, Cl. 340-365.000.

Kilgore, Bernard W. Enuresis prevention training device. 3,696,357, Cl. 340-235.000.

Killion, Derling G.; and Roberts, Kent B., to Teledyne Ryan Aeronautical Company. Resonant slot antenna structure. 3,696,433, Cl. 343-770.000.

Kim, Yang Joo: *See—*
Kearns, Tommy Carter; and Kim, Yang Joo, 3,695,835.

Kimberly-Clark Corporation: *See—*
Brock, Robert J.; and Thomas, Gordon D., 3,695,985.
Burger, William H., 3,694,815.
Endres, Dan D., 3,695,260.
Sorenson, Wayne P., 3,694,927.
Stumpf, Robert J., 3,694,867.
Voss, Joseph A.; and Johnson, Carl W. (said Voss assor. to), 3,695,970.

Kimura, Hiroshiro; Arimoto, Heiji; Nara, Hirohisa; Miyamatsu, Tsugio; and Kitajima, Mitsuo, to Unitaka Ltd. Yarn carrier for a weaving machine. 3,695,306, Cl. 139-125.000.

King, Chia-Cheng; Jorgensen, Arnold J.; and Behr, Michael I., to Burroughs Corporation. Binary data handling system. 3,696,255, Cl. 307-241.000.

King, Earl M.: *See—*
Bailey, Darrel E.; and King, Earl M., 3,694,918.

King, Herbert R., to Deering Milliken Research Corporation. Vulcanizing rubber covered wire. 3,695,228, Cl. 118-620.000.

King, Karl Lewis: *See—*
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King Radio Corporation: *See—*
Burrell, Gary L., 3,696,422.

Kinkaid, Robert John; and Asick, John Car, to AMP Incorporated. Dip header. 3,696,323, Cl. 339-192.00r.

Kinney, S. P., Engineers, Inc.: *See—*
Bradel, Norman F., 3,695,300.

Kipling, Barry John, to Pye Limited. Closed circuit medical respirators. 3,695,263, Cl. 128-145.600.

Kirche, Robert M. Drapery support apparatus for rufflette and shirred draperies. 3,695,489, Cl. 223-34.000.

Kirkland, Kenneth C. Jr., to Garlock, Inc, mesne. Method and apparatus for isolating and measuring vehicle noise. 3,695,098, Cl. 73-117.100.

Kishikawa, Toshiro: *See—*
Mori, Minoru; and Kishikawa, Toshiro, 3,696,202.

Kisselmann, Willy; Rumpelein, Fritz; and Kopf, Paul, to Agfa-Gevaert Aktiengesellschaft. Balancing means for moving coils of electrical measuring instruments. 3,696,295, Cl. 324-154.0pb.

Kita, John F.; and Heaton, James W., to Kennametal Inc. Abrading tool. 3,695,723, Cl. 299-40.000.

Kita, Masaaki, to Kabushiki Kaisha Komatsu Seisakusho. Mechanical double-action press of link mechanism type. 3,695,090, Cl. 72-450.000.

Kitagawa, Tadashi; Yaguchi, Shoichiro; Yamanobe, Katsuyuki; and Kawamata, Masao, to Daito Tsushinki Kabushiki Kaisha. Fuses and fuseholders. 3,696,316, Cl. 337-206.000.

Kitajima, Mitsuo: *See—*
Kimura, Hiroshiro; Arimoto, Heiji; Nara, Hirohisa; Miyamatsu, Tsugio; and Kitajima, Mitsuo, 3,695,306.

Klanberg, Frank Karl, to Du Pont de Nemours, E. I., and Company. Transition metal complexes of phosphine. 3,695,853, Cl. 23-360.

Klatt, Alfred: *See—*
Hennig, Karl-Friedrich; Reinecke, Erich; Merz, Herbert; Werner, Egon; Isernhagen, Fritz; Holthusen, Erwin; and Klatt, Alfred, 3,695,734.

Klauer, Friedrich W.; Kroger, Johannes Hugo; and Waldmann, Wilhelm. Gas mantle packages. 3,695,416, Cl. 206-45.140.

Klaus, Thomas: *See—*
Ost, Walter; Klaus, Thomas; Dietrich, Jerchel; and Appel, Karl-Richard, 3,696,106.

Klein, Harold T.: *See—*
Porter, Wilson B.; and Klein, Harold T., 3,695,364.

Klein, Robert T.; and Kreiselman, Robert L., to Coulter Electronics, Inc. Range expansion method and apparatus for multichannel pulse analysis. 3,696,399, Cl. 340-347.0ad.

Kleinschmidt, Johann: *See—*
Papajewski, Reinhold; and Kleinschmidt, Johann, 3,695,200.

Klemm, Edwin O., to Saginaw Products Corporation. Plunger stopped bi-directional no-back assembly. 3,695,402, Cl. 192-8.00r.

Klepa, Peter P.: *See—*
Lee, Robert L.; Schwartz, Jacob L.; and Klepa, Peter P., 3,694,919.

Klessig, Ernest F., to Worthington Corporation, mesne and Engine International Division. Hydraulic hammer with back pressure isolation. 3,695,366, Cl. 173-134.000.

Kline, Arthur J., Jr., to Motorola, Inc. Coherent jump frequency synthesizer. 3,696,306, Cl. 331-2.000.

Klingerman, Robert H.: *See—*
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Klose, Alvin A.: *See—*
Kaufman, Vern F.; Klose, Alvin A.; and Pool, Morris F., 3,694,856.

Knabusch, Edward M.; Shoemaker, Edwin J.; and White, David B., to Ruble, Harold P. and La-Z-Boy Chair Company. Adjustable leg rest. 3,695,701, Cl. 297-429.000.

Knape & Vogt Manufacturing Company: *See—*
Pullan, Ronald C., 3,695,569.

Knapsack Aktiengesellschaft: *See—*
Wirtz, Peter; Jacobowsky, Armin; and Mittler, Werner, 3,696,015.

Knepper, Wilhelm; and Austin, Severin, to Chemische Werke Huls Aktiengesellschaft. Process for recovering mercury from waste water of industrial processes. 3,695,838, Cl. 425-106.000.

Kniel, Ludwig, to Lummus Company, The. Aqueous amine acid gas absorption. 3,696,162, Cl. 260-677.00a.

Knight, Allan R.: *See—*
Harrod, John F.; Knight, Allan R.; and McIntyre, John S., 3,696,052.

Knogo Corporation: *See—*
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Knoll, Jozsef: *See—*
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Kobayashi, Sakae; Hori, Hiroshi; and Matsunaga, Toshio, to Japan Steel Works, Ltd. Reel switching device for a double-reel parallel-shaft type continous winding machine. 3,695,527, Cl. 242-25.00a.

Kobayashi, Tatsuo, to E.R.D. Corporation. Information writing circuit for memory device. 3,696,348, Cl. 340-174.0ac.

Kobe Steel, Ltd.: *See—*
Otani, Yasuhiko, 3,695,525.
Otani, Yasuhiko; and Ikegami, Yoshio, 3,695,526.

Kobetz, Paul; and Lindsay, Kenneth L., to Ethyl Corporation. Chemical process of separating hydrocarbyl aluminum from olefins by the use of 2:1 complexes of aluminum alkyls and an alkali metal salt. 3,696,161, Cl. 260-677.00a.

Kobinger, Walter: *See—*
Eberlein, Wolfgang; Nickl, Josef; Heider, Joachim; Dahms, Gerhard; and Kobinger, Walter, 3,696,091.

Kobushiki Kaisha Toyoda Jido Shokki Seisakusho: *See—*
Hayashi, Yasutaka; and Arakawa, Hideo, 3,695,023.

Koch, Robert W., to Gulf Research & Development Company. Cracking of a gas oil with zeolite and monzeolite catalyst. 3,696,023, Cl. 208-87.000.

Kochs Adlernahmaschinenwerke AG: *See—*
Heimann, Alfred, 3,695,194.

Kocks, Friedrich. Method for manufacture of seamless tube. 3,695,076, Cl. 72-97.000.

Kokusai Denshin Denwa Kabushiki Kaisha: *See—*
Yokoi, Hiroshi; and Fukumuro, Hiroshi, 3,696,436.

Koller, Johann, to MMM Munchener Medizin Mechanik GmbH. Hospital bed. 3,694,830, Cl. 5-63.000.

Komatsu, Kiroku: *See—*
Kuroki, Nobuhiko; Komatsu, Kiroku; Tamura, Shuji; and Matsumoto, Hiroyuki, 3,695,821.

Kondo, Masaru, to Nippon Gakki Seizo Kabushiki Kaisha. Method for manufacturing a piston valve for valved wind musical instruments by the same. 3,694,884, Cl. 29-157.10r.

Koninklijke Nederlandsche Hoogovens En Staalfabrieken N.V.: *See—*
Hollander, Frans, 3,695,594.

Kopf, Paul: *See—*
Kisselmann, Willy; Rumpelein, Fritz; and Kopf, Paul, 3,696,295.

Koppers Company, Inc., mesne: *See—*
Hill, Robert E., 3,695,920.

Kose, Tatsuo: *See—*
Hori, Kiyokazu; Kose, Tatsuo; and Ochi, Kazuo, 3,695,017.

Kovarik, Vincent J. Game bird transporting device. 3,695,233, Cl. 119-19.000.

Krantz, Karl W.: *See—*
Clark, Robert F.; and Krantz, Karl W., 3,696,137.

Kraus, Joachim: *See—*
Cremer, Gottfried; and Kraus, Joachim, 3,694,981.

Kraus, Johann. Through running and pressure pump. 3,695,787, Cl. 417-547.000.

Krauss, Heinz-Walter: *See—*
Mott, Ludwig; Muller, Richard; Dinges, Karl; and Krauss, Heinz-Walter, 3,696,063.

Kreiselman, Robert L.: *See—*
Klein, Robert T.; and Kreiselman, Robert L., 3,696,399.

Krekeler, Claude B., to Cincinnati Mine Machinery Co., The. Mounting means for cutter bits. 3,695,726, Cl. 299-86.000.

Kroger, Johannes Hugo: *See—*
Klauer, Friedrich W.; Kroger, Johannes Hugo; and Waldmann, Wilhelm, 3,695,416.

Krolikiewicz, Thaddeus A.: *See—*
Domba, Elemer; and Krolikiewicz, Thaddeus A., 3,696,081.

Kronman, Seymour; Spencer, Dana E.; and Henderson, Larry D., to United States of America, Navy. Explosive ordnance demolition weapon. 3,695,141, Cl. 89-1.000.

Krueger Metal Products, Inc.: *See—*
Weagle, James A., 3,695,567.

Krupka, Ronnie W., to ECC Corporation. RMS voltage or current sensor. 3,696,294, Cl. 324-105.000.

Kruse, Frederick V.; and Pichon, James D., to Ag-Rain, Inc. Hose coupler. 3,695,632, Cl. 285-5.000.

Kubota, Nobuo, to Mitsubishi Denki Kabushiki Kaisha. Correction system for continuous rolling mill. 3,695,075, Cl. 72-19.000.

Kuchler, Heinz: *See—*
Wincierz, Peter; Ruhle, Manfred; Kuchler, Heinz; Borgstedt, Hans Ulrich; and Bohm, Horst Otto, 3,695,866.

Kuehne, Richard O.: *See—*
Perdue, Richard R.; Hoagland, Le Roy F.; and Kuehne, Richard O., 3,694,991.

Kufrin, Frederick W.; Virnoche, Paul R.; Allen, Donald J.; Gokey, Phillip E.; and Rose, Frederick A., to Polar Ware Company. Disposal of human waste by incineration. 3,694,825, Cl. 4-131.000.

Kuhn, Lawrence; Sadagopan, Varadachari; and Tsui, Robert T., to International Business Machines Corporation. Cyclotion resonance devices controllable by electric fields. 3,696,312, Cl. 333-24.00r.

Kuhns, Frederick S., 33% each to Southern Laminating Co. and Tri-State Veneer & Plywood Co. Method of manufacturing furniture fabrication cores. 3,695,966, Cl. 156-190.000.

Kulicke and Soffa Industries, Inc.: *See—*
Angelucci, Thomas L.; and Kulicke, Frederick W., Jr., 3,696,229.

Kulicke, Frederick W., Jr.: *See—*
Angelucci, Thomas L.; and Kulicke, Frederick W., Jr., 3,696,229.

Kumai, Akira; and Terashita, Takaaki, to Fuji Photo Film Co., Ltd. High-speed fine grain light-sensitive material. 3,695,882, Cl. 96-68.000.

Kunstle, Gerhard; and Liberda, Heinz, to Wacker-Chemie G.m.b.H. Process for continuously producing pure sorbic acid. 3,696,147, Cl. 260-526.00n.

Kuoni, Xaver, to Borbe-Wanner AG. Apparatus for tightening and connecting the overlying portions of a flexible closure band placed about a package or the like. 3,695,307, Cl. 140-93.400.

Kuraray Co., Ltd.: *See—*
Matsushita, Hidekatsu; and Ouba, Kenichi, 3,695,801.

Kurasawa, Makoto, to Kabushiki Kaisha. Mechanism for moving movie projector film intermittently in normal and reverse directions. 3,695,753, Cl. 352-173.000.

Kurashina, Kouzo: *See—*
Arimura, Ichiro; and Kurashina, Kouzo, 3,696,219.

Kureha Kogaku Kogyo Kabushiki Kaisha: *See—*
Okuda, Kensuke; Yoshida, Tadaaki; and Sugawara, Katsuyuki, 3,694,862.

Kuroki, Nobuhiko; Komatsu, Kiroku; Tamura, Shuji; and Matsumoto, Hiroyuki, to Nippon Kayaku Kabushiki Kaisha. Process for fast dyeing of fibres and shaped articles. 3,695,821, Cl. 8-2.000.

Kus, Crawford M., to Veeder Industries, Inc. Computing device. 3,696,236, Cl. 235-151.340.

Kusan, Inc.: *See—*
Brown, Arnold E., 3,695,736.

Kutsay, Ali Umit. Strain detecting load cell. 3,695,096, Cl. 73-88.50r.

Kyle, Thomas A.; and Croy, Charles T. Method and apparatus for determining magnification ratio of microform reader. 3,695,768, Cl. 356-165.000.

La Barber, Joseph A., to Weiland, Henry. Gas medium circulating assembly. 3,695,781, Cl. 417-12.000.

La Branche, Harvey W.: *See—*
Baynes, William R.; La Branche, Harvey W.; and Soulakis, George, 3,695,513.

La Via, Anthony L.: *See—*
Hill, John A.; and La Via, Anthony L., 3,695,898.

La-Z-Boy Chair Company: *See—*
Knabusch, Edward M.; Shoemaker, Edwin J.; and White, David B., 3,695,701.

Laakso, Thomas M.: *See—*
Reynolds, George A.; Laakso, Thomas M.; Borden, Douglas G.; and Williams, Jack L. R., 3,696,072.

Labarge, Robert G.; Evani, Syamalarao; and Hanson, Alden W., to Dow Chemical Company, The. Cleaning composition for glass and reflective surfaces. 3,696,043, Cl. 252-153.000.

Lace, Melvin A., to Motorola, Inc. Permanent magnet rotor structure. 3,696,260, Cl. 310-156.000.

Lacroux, Gerard: *See—*
Margrain, Pierre; and Lacroux, Gerard, 3,694,907.

Laeral, Asmund S. Respiratory mask. 3,695,264, Cl. 128-145.500.

Lagercrantz, Bengt Ake; and Andersen, Kare, to Telefonaktiebolaget L M Ericsson. Anhydrous electrolyte for electrolytic capacitors. 3,696,037, Cl. 252-62.200.

Lagus, Peter: *See—*
Lower, John H.; and Lagus, Peter, 3,695,611.

Lai, San-Cheng, to Kerr-McGee Chemical Corporation. Process for electrodepositing manganese metal. 3,696,011, Cl. 204-105.00m.

Laing, Marvin R. Overspeed safety brake for elevators. 3,695,399, Cl. 188-187.000.

Lamb, Thomas L. Lounge chair. 3,695,685, Cl. 297-29.000.

Lambiris, Theodore, to General Motors Corporation. Transmission gearshift indicator. 3,695,215, Cl. 116-124.00r.

Laming, Frank P.; Levine, Solomon L.; and Sincerbox, Glenn T., to International Business Machines Corporation. Hologram life extension. 3,695,879, Cl. 96-48.000.

Lammers, Arthur R.: *See—*
Guyton, James H.; and Lammers, Arthur R., 3,695,552.

Lamore, Herbert T., to Holley Carburetor Company. Air valve carburetor. 3,695,589, Cl. 261-23.00a.

Lampe, Warren R., to General Electric Company. Room temperature vulcanizable silicone rubber composition. 3,696,090, Cl. 260-18.00s.

Land, Edwin, to Polaroid Corporation. Photographic fluid container manufactured by freezing and sealing liquid. 3,695,884, Cl. 96-76.00c.

Landwehrkamp, Hans, to Schubet & Salzer Maschinenfabrik Aktiengesellschaft. Method and apparatus for the interruption silver supply in open end spinning machine. 3,695,022, Cl. 57-81.000.

Lang, Walter T., to Simmonds Precision Products, Inc. Analog-to-digital converter. 3,696,400, Cl. 340-347.0ad.

Langan, John P.; and Cobbeldick, Charles R., to Essex International Inc. Latchable reciprocating switch construction. 3,696,222, Cl. 200-16.00r.

Lange, Howard G. Method of screening a color image reproducing device. 3,695,871, Cl. 96-1.200.

Langowski, Faustyn C., to Jackson, Byron, Inc. Fluid transfer apparatus for well pipe elevator. 3,695,669, Cl. 294-82.00r.

Lanmon, C. P., II, to Schlumberger Technology Corporation. Apparatus for perforating earth formations. 3,695,368, Cl. 175-4.520.

Laporte Industries Limited: *See—*
Bol, Jan Paul; Gebhart, Joseph; and Seger, Gunther, 3,695,765.
Sunderland, Stephen; and Whittam, Thomas V., 3,695,837.

Lappage, James. Method and apparatus for forming yarn. 3,695,019, Cl. 57a38.300.

Larocque, Jacques: *See—*
Beaudoin, Jean Paul; Hogue, Hiral; and Larocque, Jacques, 3,695,423.

Larocque, Patricia Powers: *See—*
Beaudoin, Jean Paul; Hogue, Hiral; and Larocque, Jacques, 3,695,423.

Larsen, Reid S.: *See—*
Walker, Grant W.; Ford, Duane B.; Meinzer, Lester N.; and Larsen, Reid S., 3,695,583.

Larson, Charles O., to Larson, Chas. O., Co. Display stand. 3,695,455, Cl. 211-78.000.

Larson, Chas. O., Co.: *See—*
Larson, Charles O., 3,695,455.

Last, James David; and Rowe, David N. E., to University College of North Wales. Method of generating electricity and electrical generator. 3,696,251, Cl. 290-53.000.

Latour, Yves: *See—*
Ollinger, James C.; Wolf, Herbert R., Jr.; and Latour, Yves, 3,695,395.

Laubach, Wilburn B. Adjustable torque limiting coupling. 3,695,059, Cl. 64-29.000.

Lauber, Ernst Abraham; and Barendsen, Pieter. Raise boring machine. 3,695,718, Cl. 299-31.000.

Lauro, Luciano: *See—*
Pomella, Piero; Baratto, Elia; and Lauro, Luciano, 3,696,398.

Lavelle, Michael R. Safety device monitoring system. 3,696,364, Cl. 340-252.00r.

Lavergne, Rene Georges. Device for assembling tubular members. 3,695,649, Cl. 287-54.00a.

Lawson, Robert R.; and Metzinger, Leonard L., to Bunker-Ramo Corporation. Isochronal correction system. 3,695,032, Cl. 58-107.000.

Layman, Lee R., to Monsanto Company. Sheet molding apparatus including means for removing molded articles from the sheet material. 3,695,804, Cl. 425-292.000.

Laymon, Marvin D.; McCoy, Jerome D.; and Schewe, Millard F., to Sylvania Electric Products, Inc. Signal processor. 3,696,369, Cl. 340-258.00d.

Le Goff, Yves: *See—*
Cometti, Andre; Fouche, Jean; and Le Goff, Yves, 3,696,103.

Le Page, Jean Francois: *See—*
Uuguin, Bernard; Le Page, Jean Francois; and Miquel, Jean, 3,696,167.

Le Page, Madeleine A.; Beau, Raymond; and Jacques, Maison-Alfort, to Produits Chimiques Pechiney-Saint-Gobain. Porous silica containing foreign ions and method for preparation for same. 3,696,053, Cl. 252-437.000.

Leaper, Rodney Seymour: *See—*
Cannell, John Carjeag; Leaper, Rodney Seymour; and Paratt, Noel James, 3,695,335.

Lechner, Alfred: *See—*
Ida, Edward S.; Lechner, Alfred; and Parsons, James L., 3,696,206.

Lederer, Michael; and Siegfried, Sommer, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Process for producing polymers of tertiary amides. 3,696,085, Cl. 260-80.30n.

Lee, Alfred, to Main Trucking & Rigging Co., Inc. Propeller stand. 3,695,566, Cl. 248-119.00r.

Lee Chi-Hang; and Feldman, Jacob Richard, to General Foods Corporation. Method of preserving food. 3,695,899, Cl. 99-150.000.

Lee, Donald H.: *See—*
Corrigan, Gordon D.; Lee, Donald H.; Olsen, Howard E.; and Petry, Robert J., 3,695,121.

Lee, Elsie Chang; and Societe Industrielle Bull-General Electric. Apparatus for the receiving, storing and restitution of recording tapes. 3,695,541, Cl. 242-71.800.

Lee, Robert L.; Schwartz, Jacob L.; and Klepa, Peter P., to Dentonamics Corporation. Dental articulator. 3,694,919, Cl. 32-32.000.

Leech, Okie R.; and Dewey, Ernest A., to Texaco Inc. Gas flow diffuser. 3,695,011, Cl. 55-386.000.

Leesona Corporation: *See—*
Ditzler, John W., 3,694,871.
Richter, Hans H., 3,695,020.

Lefforge, John W.: *See—*
Edmonston, Robert P.; Lefforge, John W.; and Keller, George C., 3,695,477.

Lehmann, Hans Rudolf: *See—*
Goiffon, Thierry; Lehmann, Hans Rudolf; and Schaidl, Hubert, 3,695,144.

Leifeld, Klaus; Wochnik, Josef; and Stoy, Erich, to Schloemann Aktiengesellschaft. Multi-roll stands. 3,695,082, Cl. 72-243.000.

Leigh, Bertram Jonathan, to General Cable Corporation. Aerial lift with workman's basket with protective covering. 3,695,390, Cl. 182-12.900.

Leliaert, Raymond M., to Wheelabrator-Frye, Inc. Centrifugal blasting wheel. 3,694,963, Cl. 51-9.000.

Lemelson, Jerome H. Credit verification system. 3,696,335, Cl. 340-149.00a.

Lengyel, Sandor: *See—*
Hollo, Imre; Lengyel, Sandor; Hannauer, Milos; and Eross, Bela, 3,695,412.

Lennox, Thomas M., to Scanfax Systems Corporation. Tape drive shutoff. 3,695,550, Cl. 242-191.000.

Leon, Luis P., to Technicon Instruments Corporation. Method and apparatus for fluid injection. 3,695,281, Cl. 137-1.000.

Leonard, Jay F., to Philco-Ford Corporation. Adaptive modem receiver. 3,696,203, Cl. 178-88.000.

Lepetit, Pierre: *See—*
Hivert, Andre; Lepetit, Pierre; and Walder, Andre, 3,695,869.

Les Fabriques d'Assortiments Reunies: *See—*
Simon-Vermot, Andre, 3,694,885.

Lesage, Jean; and Dawans, Francois, to Institut Francais du Petrole, des Carburants et Lubrifiants. Compositions containing amorphous 1,2-polybutadiene. 3,696,062, Cl. 260-5.000.

Lester, Robert W., to Recognition Devices, Inc. Ultrasonic tracking and locating system. 3,696,384, Cl. 340-312.000.

Lever Brothers Company: *See—*
Malhotra, Virender Nath, 3,696,143.

Levine, Seymour D., to Squibb, E. R., & Sons. Acid and ester intermediates for preparing 3,4-bisnor-5-aza-B-hamopregnane-2,20-diones. 3,696,109, Cl. 260-287.00r.

Levine, Solomon L.: *See—*
Laming, Frank P.; Levine, Solomon L.; and Sincerbox, Glenn T., 3,695,879.

Levitan, Jacob, to Institute of Gas Technology. Electrolytic production of aluminum. 3,696,008, Cl. 204-67.000.

Lewis, George E.: *See—*
Murman, Fernando; Lewis, George E.; and O'Brien, Charles E., 3,695,349.

Lewis, John C., to Park-Ohio Industries, Inc. Transformer and inductor unit for heating valve seats. 3,696,224, Cl. 219-10.570.

Lewis, William L., to Gloekler, Bernard. Pallet rack. 3,695,456, Cl. 211-148.000.

Li, Norman N.; and Long, Robert B. Liquid membrane separation process. 3,696,028, Cl. 208-308.000.

Libbey-Owens-Ford Company: *See—*
Zellers, James T., Jr., 3,695,861.

Liberda, Heinz: *See—*
Kunstle, Gerhard; and Liberda, Heinz, 3,696,147.

Licentia Patent-Verwaltungs-G.m.b.H.: *See—*
Dickopp, Gerhard, 3,696,220.

Lichstein, Bernard M.; and Woolf, Cyril, to Allied Chemical Corporation. Halogen-exchange fluorination of organic compounds using ammonium fluoride. 3,696,150, Cl. 260-544.00f.

Lieberman, Samuel. Water tap filter. 3,695,450, Cl. 210-449.000.

Liebl, Albert: *See—*
Von Hornstein, Wolf Freiherr; Richt, Hubert O.; and Liebl, Albert, 3,695,549.

Liggett & Myers Incorporated: *See—*
Pullman, James O.; and Weidlich, William R., 3,696,299.

Liggett & Myers Incorporated, mesne: *See—*
Tripodi, Peter R., 3,695,422.

Lill, Arnulf: *See—*
Egger, Viktor; Lill, Arnulf; and Metzdorf, Werner, 3,695,854.

Lind, Heinrich; Mahl, Hans; and Beer, Ekkehard, to Kalle Aktiengesellschaft. Process for the continuous production of a flexible porous multilayer web having a high-gloss outer surface. 3,695,972, Cl. 156-324.000.

Linde Aktiengesellschaft Zentrale Patentabteilung: *See—*
Rottmayr, Friedrich; and Reimann, Hans, 3,695,002.

Lindner, Herbert, G.m.b.H., Firma: *See—*
Stade, Gerhard, 3,695,119.

Lindsay, Kenneth L.: *See—*
Kobetz, Paul; and Lindsay, Kenneth L., 3,696,161.

Lindsay, Richard P.: *See—*
Hahn, Robert S.; and Lindsay, Richard P., 3,694,969.

Lindstaedt, Horst Karl, to Mason Scott Thrissell Engineering Limited. Apparatus for preparing reels of sheet material for unwinding. 3,695,532, Cl. 242-55.000.

Lindstaedt, Horst Karl, to Masson Scott Thrissell Engineering Limited. Means for unwinding reels of sheet material. 3,695,538, Cl. 242-58.600.

Lindstaedt, Horst Karl, to Masson Scott Thrissell Engineering Limited. Multiple reel unwind stands. 3,695,539, Cl. 242-58.600.

Lindstrom, Kjell O. T.: *See—*
Hertz, Carl Hellmuth; and Lindstrom, Kjell O. T., 3,695,107.

Lineberg, Birger David. Apparatus for measuring water impurities in oil. 3,695,095, Cl. 73-61.10r.

Ling, Bernt; Persson, Anders; and Svensson, Olof, to Allmanna Svenska Elektriska Aktiebolaget. Apparatus for determining visibility including a pulsed light source, a plurality of spaced reflectors, and a detector. 3,694,936, Cl. 356-208.000.

Linquist & Vennum, mesne: *See—*
Braaten, Norman J., 3,696,409.

Liquid Carbonic Corporation: *See—*
Glynn, Emmett P.; and Hsu, Howard L., 3,695,056.

Litchford, George B., to United States of America, National Aeronautics and Space Administration. Altitude measuring system. 3,696,418, Cl. 343-11.00r.

Litt, Arnold D.; and Engelhart, John E., to Esso Research and Engineering Company. Tetrahydrobenzothiazolyl derivatives and their use as herbicides. 3,696,101, Cl. 260-248.0ns.

Littlefield, John C. Trailer loading tester and hitch. 3,695,213, Cl. 116-28.000.

Littlejohn, Frederick G. Automatic safety feed system for liquids. 3,695,485, Cl. 222-68.000.

Litton Industries, Inc.: *See—*
Schoonover, Stanley C.; and Luckenbach, Lester R., 3,694,970.

Litton Precision Products, Inc.: *See—*
Mack, Walter, 3,696,318.

Ljung, Bo Hans Gunnar, to Aga Aktiebolag. Failure indicating arrangements for gyroscopes. 3,696,363, Cl. 340-248.00b.

Lloyd, Anthony Michael; and Alexander, David George, to Rose, Downs & Thompson Limited. Extraction of oil from oil-bearing materials. 3,696,133, Cl. 260-412.800.

Loblick, Dermont F. Hydraulic arrangement for dockboards. 3,694,839, Cl. 14-71.000.

Loblick, Dermont F. Dockboard raising mechanism. 3,694,840, Cl. 14-71.000.

Lockheed Aircraft Corporation: *See—*
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Kastan, Howard; and Pena, Joe C., 3,695,779.

Lockwood, David L.: *See—*
Clark, Richard J., Jr.; Veron, Harry; Gilmour, Alexander S., Jr.; and Lockwood, David L., 3,696,264.

Lohr, Thomas E.; and Stephenson, Robert L., to Allied Chemical Corporation. Vehicle seat with integral seat and back portions. 3,695,696, Cl. 297-388.000.

Londo, Erwin N. Rotary internal combustion engine. 3,695,237, Cl. 123-43.00a.

Long, Raymond W.: *See—*
Wetzel, William C.; and Long, Raymond W., 3,696,410.

Long, Robert B.: *See—*
Li, Norman N.; and Long, Robert B., 3,696,028.

Loomans, Bernard A. Apparatus for pumping fluids. 3,695,788, Cl. 417-488.000.

Lorton Laboratories, Ltd.: *See—*
Chen, Allen, 3,694,939.

Louderback, Anthony W.; and Zook, Morris A., Jr. Method of applying a multilayer antireflection coating to a substrate. 3,695,910, Cl. 117-33.300.

Lourie Visual Etudes, Inc.: *See—*
Hanson, Harold E., 3,695,608.

Lower, John H.; and Lagus, Peter, to Deneb Products Engineering. Billiard cue and cue tip assembly. 3,695,611, Cl. 273-70.000.

Loyd, Calvin D.: *See—*
Engelking, Frederick S.; and Loyd, Calvin D., 3,695,641.

Loyd, Calvin D., to Caterpillar Tractor Co. Method of friction welding. 3,694,896, Cl. 29-420.300.

LTV Electrosystems, Inc., mesne: *See—*
Pierce, John A., 3,696,424.

Lubinski, Arthur, to Pan American Petroleum Corporation. Suspending casing through permafrost. 3,695,351, Cl. 166-96.000.

Lucas, Joseph, (Industries) Limited: *See—*
Cooksey, William Harold, 3,694,905.

Luckenbach, Lester R.: *See—*
Schoonover, Stanley C.; and Luckenbach, Lester R., 3,694,970.

Luckey, George W., to Eastman Kodak Company. Positive image production with unfogged internal image silver halide emulsion containing mercaptan retardner and a surface latent image silver halide emulsion. 3,695,881, Cl. 96-29.000.

Luk Lamellen ünd Kupplungsbau GmbH: *See—*
Maucher, Paul; and Steeg, Klaus, 3,695,405.

Luk Lamellen und Kupplungslau GmbH: *See—*
Maucher, Paul; and Steeg, Klaus, 3,695,404.

Lummus Company, The: *See—*
Kniel, Ludwig, 3,696,162.
Smith, Colin, 3,695,482.

Lundin, Seth Johan Roland; and Bjorkman, Bengt Harry, to U.S. Philips Corporation. System for the transmission of intelligence by means of scrambled audiosignals. 3,696,207, Cl. 179-1.50s.

Lundstrom, Hans, to Allmanna Svenska Elektriska Aktiebolaget. Furnace for heat treating objects under pressure. 3,695,597, Cl. 266-2.00r.

Lunsford, Carl Dalton; and Cale, Albert Duncan, Jr., to Robins, A. H., Company, Incorporated. 1-Hydrocarbon-4-aryl-2,3-dioxo-5-(2-haloethyl) piperazines. 3,696,104, Cl. 260-268.0dk.

Lussier, Maurice G. Needleless sequential dosing syringe. 3,695,266, Cl. 128-173.00h.

Luwa AG: *See—*
Widmer, Fritz, 3,695,327.

Lyall, Charles E.; and Rak, Stanley F., to Culligan International Company. Membrane module assembly. 3,695,446, Cl. 210-321.000.

Maack, Horst Egon Fred Ludwig: *See—*
Keith, Donald George; Maack, Horst Egon Fred Ludwig; and Morris, Douglas Barrett, 3,695,959.

Maassen, Wilhelm: *See—*
Pesch, Albert Tho; and Maassen, Wilhelm, 3,695,522.

Macaluso, Sebastian B.: *See—*
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Macintyre, John S.: *See—*
Wiesler, Mordechai; Martinonis, Virgil; and Macintyre, John S., 3,695,414.

Mack Trucks, Inc.: *See—*
Trump, Norman M., 3,695,698.

Mack, Walter, to Litton Precision Products, Inc. Trimmer potentiometers. 3,696,318, Cl. 338-162.000.

MacMillan Bloedel Limited: *See—*
Worster, Hans Edmund; and Pudek, Marian Franciszek, 3,695,994.

Macy, James B., Jr.: *See—*
Satterthwaite, James Glenn; and Macy, James B., Jr., 3,695,637.

Maestrelli, Gino. Self-cleaning filter, particularly for dry-cleaning plants. 3,695,447, Cl. 210-332.000.

Magerlein, Helmut: *See—*
Rupp, Hans-Dieter; Meyer, Gerhard; and Magerlein, Helmut, 3,695,832.

Maggar Viscosa Gyar: *See—*
Greguss, Pal; Nagy, Sandor B.; Erdei, Janos; and Toth, Lajos, 3,695,825.

Maguire, Hugh C.: *See—*
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Mahaffy, Reid A.: *See—*
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Mahl, Hans: *See—*
Lind, Heinrich; Mahl, Hans; and Beer, Ekkehard, 3,695,972.

Mahler, Hans Hermann: *See—*
Arian, Charles Mourad; Mahler, Hans Hermann; Hayes, Claude Cecil, Jr.; and Tanner, Hal W., Jr., 3,695,219.

Maier, Charles N. Sliding cover apparatus for ice fishing hole. 3,694,950, Cl. 43-4.000.

Maier, Gary H., to Ferti-Feeder, Inc. Fertilizer applying apparatus. 3,695,193, Cl. 111-93.000.

Maier, Roy R. Vehicle hook. 3,694,866, Cl. 24-115.00j.

Main Trucking & Rigging Co., Inc.: *See—*
Lee, Alfred, 3,695,566.

Maisch, Wolfgang: *See—*
Schnaebel, Eberhard; Fleischer, Helmut; Zechnall, Richard; Domann, Helmut; Maisch, Wolfgang; and Christ, Klaus, 3,696,270.

Makula, Daniel; Druet, Monique; and Gonthier, Beatrice, to Progie. 1,2,4-Oxadiazine-3,6-diones. 3,696,099, Cl. 260-244.00r.

Malaney, Frank E., to Johnson & Johnson. Method of making absorbent products with highly absorbent cores and relatively dry facings. 3,695,269, Cl. 128-284.000.

Malcolm, Robert La Verne: *See—*
Bichel, Darwin Carl; Malcolm, Robert La Verne; and Slaverns, Wayne Eldon, 3,695,627.

Malcomson, Robert S.: *See—*
Hutchinson, Herman R.; Arpajian, Vasken F.; and Malcomson, Robert S., 3,695,800.

Maldonado, Juan Ramon, to Bell Telephone Laboratories, Incorporated. Optical transmission system including strain-biased electrooptic ceramic devices. 3,695,747, Cl. 350-150.000.

Malhotra, Virender Nath, to Lever Brothers Company. Detergent active materials. 3,696,143, Cl. 260-513.00r.

Maloon, Richard A.: *See—*
Tufts, Donald W.; Burt, Ralph E.; Davis, Victor I., Jr.; Queenan, James F.; Maloon, Richard A.; and Waterman, David W., 3,696,235.

Malpassi, Alberto. Gasoline pressure regulator device. 3,695,438, Cl. 210-137.000.

Mangold, Dietrich: *See—*
Mueller, Herbert; and Mangold, Dietrich, 3,696,155.

Mannherz, Elmer D.; and Hermanns, Henry M., to Fischer & Porter Co. Electromagnetic flowmeter having removable line. 3,695,104, Cl. 73-194.0em.

Mannin Engineering Limited: *See—*
Clague, John Henry, 3,695,640.

Mansfield, John Rickard: *See—*
Broadbent, Graham; and Mansfield, John Rickard, 3,695,113.

Mant, Alistair Donald: *See—*
Eccles, Anthony John; Mant, Alistair Donald; and Shorthouse, Barry Owen, 3,695,115.

Manyik, Robert M.: *See—*
Matzner, Markus; McGrath, James E.; Manyik, Robert M.; and Walker, Wellington E., 3,696,075.

Marande, Claude: *See—*
Schmitt, Henri Francois Marie; and Marande, Claude, 3,695,382.

Marathon Golf Cars Ltd.: *See—*
Gyori, Louis, 3,696,279.

Marathon Oil Company: *See—*
Argabright, Perry A.; Presley, C. Travis; and Bixel, Harold C., 3,695,356.
Wygant, Noel D., 3,695,108.

Margrain, Pierre; and Lacroux, Gerard, to Etablissements E. Ragonot. Method of making low inertia rotor for dynamo electric machines. 3,694,907, Cl. 29-598.000.

Mark Products, Inc.: *See—*
Hazelhurst, Gerald D., 3,696,329.

Marker, Hannes: *See—*
Jungkind, Roland, 3,695,624.

Markert, Franz: *See—*
Munnich, Hermann; and Markert, Franz, 3,695,391.

Markley, Roger A.: *See—*
Cory, Terry S.; and Markley, Roger A., 3,696,430.

Maropis, Nicholas: *See—*
Walraven, Thomas A.; Maropis, Nicholas; Elmore, William C.; and Devine, Janet, 3,695,500.

Marosy, Andre. Coupling. 3,695,648, Cl. 285-376.000.

Marquardt Industrial Products Co.: *See—*
Risely, Richard E., 3,696,243.

Marsan, Arthur E. Disposable drainage pouch for colostomy and the like and method of making. 3,695,268, Cl. 128-283.000.

Martelli, Nerio. Foamed plastic pocket tray for fruits or like articles. 3,695,453, Cl. 211-14.000.

Martin, Jack; and Gorecki, Joseph S., to Westinghouse Electric Corporation. Compact single-ended incandescent lamp having improved filament mount assembly. 3,696,265, Cl. 313-222.000.
Martin, James Ear, Sr. Internal expansion vapor engine. 3,695,036, Cl. 60-27.000.
Martin, Robert W. Tag line control mechanism. 3,695,473, Cl. 214-657.000.
Martin-Marietta Corporation: *See—*
Cunningham, Robert A.; and Winkler, John T., 3,696,248.
Martinonis, Virgil: *See—*
Wiesler, Mordechai; Martinonis, Virgil; and Macintyre, John S., 3,695,414.
Martz, Lyle F.; and Nanz, John W. Blower system and control system therefor. 3,695,774, Cl. 415-17.000.
Maryama, Shoji; Saito, Tadashi; and Asami, Tomiaki. Heat developable diazotype copying material. 3,695,885, Cl. 96-91.00r.
Mas Hydraulic & Vulcanizing Machine Co. S.r.l.: *See—*
Vicini, Dino, 3,695,809.
Mascetti, Joseph A., Jr., to Plastofilm Industries, Inc. Manifold case. 3,695,503, Cl. 229-2.500.
Mascetti, Joseph A., Jr., to Plastofilm Industries, Inc. Single sheet plastic box. 3,695,514, Cl. 229-25.000.
Maschinen- und Werkzeugbau GmbH: *See—*
Sevenich, Theodor; Zahn, Friedrich; and Zens, Peter, 3,695,080.
Maschinenfabrik Carl Zangs Aktiengesellschaft: *See—*
Rolauffs, Hans; Hoven, Hubert; Hippel, Hans; and Schafer, Max, 3,695,199.
Mase, Jiro: *See—*
Sugawara, Tsunenori; Shibuya, Teiji; Miyakado, Satoru; and Mase, Jiro, 3,695,466.
Masi, Anthony S. Molding machine. 3,695,338, Cl. 164-181.000.
Mason, Lawrence J.; and Paradysz, Louis F. Alphanumeric projection disc assembly. 3,695,161, Cl. 95-85.000.
Mason, Michael D. L. Aircraft power plant. 3,695,040, Cl. 60-203.000.
Mason, Peter Alan, to Wickman Machine Tool Sales Limited. Optical comparators. 3,695,769, Cl. 356-168.000.
Mason Scott Thrissell Engineering Limited: *See—*
Lindstaedt, Horst Karl, 3,695,532.
Massey-Ferguson Industries, Limited: *See—*
Twidall, William H.; and Byrnls, Mark K., 3,695,015.
Masson Scott Thrissell Engineering Limited: *See—*
Lindstaedt, Horst Karl, 3,695,538.
Lindstaedt, Horst Karl, 3,695,539.
Masuzawa, Isao: *See—*
Hirokawa, Yoichi; and Masuzawa, Isao, 3,696,282.
Matherly, James E., to Dow Corning Corporation. High filler content silicone elastomer with increased extrusion rate. 3,696,127, Cl. 260-375.00b.
Matsjura, Norio. Tube fastener. 3,694,869, Cl. 24-278.000.
Matsumoto, Hiroyuki: *See—*
Kuroki, Nobuhiko; Komatsu, Kiroku; Tamura, Shuji; and Matsumoto, Hiroyuki, 3,695,821.
Matsunaga, Toshio: *See—*
Kobayashi, Sakae; Hori, Hiroshi; and Matsunaga, Toshio, 3,695,527.
Taki, Toshio; and Matsunaga, Toshio, 3,695,528.
Matsushita Electric Industrial Co., Ltd.: *See—*
Arimura, Ichiro; and Kurashina, Kouzo, 3,696,219.
Sugaya, Hiroshi; and Kanai, Kenji, 3,696,216.
Wakabayashi, Takashi; Hozumi, Shiro; and Sugihara, Kanji, 3,695,870.
Matsushita, Hidekatsu; and Ouba, Kenichi, to Kuraray Co., Ltd. Apparatus for crumpling sheet-like materials. 3,695,801, Cl. 425-193.000.
Matsushita, Shigenori; Sato, Fumitaka; and Miura, Haruhisa, to Tokyo Shibaura Electric Co., Ltd. Microprogram execution control for fault diagnosis. 3,696,340, Cl. 340-172.500.
Matsuura, Hirotsugu. Shock absorbing buffer. 3,695,665, Cl. 293-70.000.
Mattel, Inc.: *See—*
Baginski, Albert R.; Okada, David T.; and Stastny, Edwin O., 3,695,148.
Baynes, William R.; La Branche, Harvey W.; and Soulakis, George, 3,695,513.
Parker, John C.; and Johnson, Keith M., 3,694,958.
Matthews, Edward E. Fish grappling device. 3,694,952, Cl. 43-5.000.
Matthias, Guenther: *See—*
Schulz, Gerhard; Harrer, Erich; and Matthias, Guenther, 3,696,142.
Matuska, James E. Quickly removable, retractable snubbed pivot pin mechanism. 3,694,851, Cl. 16-49.000.
Matzner, Markus; McGrath, James E.; Manyik, Robert M.; and Walker, Wellington E., to Union Carbide Corporation. Lactam polymerization with diacyl methane initiators. 3,696,075, Cl. 260-78.001.
Matzner, Markus; Reichle, Walter T.; Chow, Sui-Wu; and McGrath, James E., to Union Carbide Corporation. Aromatic acid diamides of diamino diphenyl sulfones. 3,696,131, Cl. 260-397.600.
Matzner, Markus; Reichle, Walter T.; Chow, Sui-Wu; and McGrath, James E., to Union Carbide Corporation. Monoamides of monoamino diryl sulfones. 3,696,132, Cl. 260-397.600.
Maucher, Paul; and Steeg, Klaus, to Luk Lamellen und Kupplungslau GmbH. Clutch plate supported by stressed leaf springs. 3,695,404, Cl. 192-70.180.
Maucher, Paul; and Steeg, Klaus, to Luk Lamellen und Kupplungsbau GmbH. Clutch disc. 3,695,405, Cl. 192-106.200.
Maurer, Mel E.: *See—*
Zahradnik, George J.; and Maurer, Mel E., 3,695,535.
Mauro, Thomas G. Permanent garbage disposal apparatus for disposal of large volumes of garbage. 3,695,520, Cl. 241-43.000.
Maury, Lawson D. Compound mitering device. 3,695,318, Cl. 144-35.000.
Maxon, Glenway, Jr.; and Wright, William H. B., III. Machine for flame cutting gear racks. 3,695,599, Cl. 266-23.00k.
May, Denis Ronald William, to Hanger, J. E., and Company Limited. Knee joints for artificial legs. 3,694,823, Cl. 3-27.000.
Mayercord Co., The: *See—*
Barta, Franz; and Grupp, Alfred F., 3,694,928.
Mayerle, Evan A.; and Minderhout, James R., to Nalco Chemical Company. Electrosynthesis of tetraorganolead compounds. 3,696,009, Cl. 204-72.000.
Mayo, Frank H., to Champion Chemicals, Inc. Composition for removal of calcium sulfate deposits. 3,696,040, Cl. 252-87.000.
Maytag Company, The: *See—*
Rottering, Quintin N., 3,695,409.
Mc Alpin, Silvan E., to Mobil Oil Corporation. Depth sounder digitizer. 3,696,326, Cl. 340-3.00r.
Mc Donald, Robert L.; and Anderson, Edgar L., to Sybron Corporation. Sliding door sterilizer with power actuated seal. 3,694,962, Cl. 49-477.000.
Mc Intosh, Lionel D.; and Weber, Daniel E. Vehicle exhaust emissions analyzer. 3,696,247, Cl. 250-83.30h.
Mc Leod, John P. Grinding or polishing or glazing machine. 3,694,965, Cl. 51-93.000.
McCarty, Frederick J.; and Palopoli, Frank P. Treatment of anoxia with 3,5, dialkyl hydantoins. 3,696,198, Cl. 424-273.000.
McClain, Charles R., to Rohr Corporation. Two part door mounting and operating mechanism. 3,695,331, Cl. 160-187.000.
McCoy, Jerome D.: *See—*
Laymon, Marvin D.; McCoy, Jerome D.; and Schewe, Millard F., 3,696,369.
McCrink, Edward J. Sewerage disposal process and apparatus. 3,695,432, Cl. 210-67.000.
McCullough, Charles D., to Allied Chemical Corporation. Oscillating scraping mechanisms for coke oven jambs. 3,696,004, Cl. 202-241.000.
McCune, Ray F.; and Porter, Richard C. Concrete hardening method and composition. 3,695,906, Cl. 106-12.000.
McDonald, Thomas W., to Hughes Aircraft Company. Analog display using light emitting diodes. 3,696,393, Cl. 340-324.00r.
McFarland, Norman T., to Glass, Marvin, & Associates. Fluid operated chimes. 3,695,993, Cl. 161-7.000.
McGill, Howard L., to Schlumberger Technology Corporation. Retrievable well packer apparatus. 3,695,352, Cl. 166-129.000.
McGrath, James E.: *See—*
Matzner, Markus; McGrath, James E.; Manyik, Robert M.; and Walker, Wellington E., 3,696,075.
Matzner, Markus; Reichle, Walter T.; Chow, Sui-Wu; and McGrath, James E., 3,696,131.
Matzner, Markus; Reichle, Walter T.; Chow, Sui-Wu; and McGrath, James E., 3,696,132.
Wieland, Peter; and McGrath, James E., 3,696,130.
McGrath, Mildred G., to McGrath-Hoffman & Associates. Mathematics teaching machine for primary grades. 3,694,932, Cl. 35-31.00b.
McGrath-Hoffman & Associates: *See—*
McGrath, Mildred G., 3,694,932.
McGuire, Robert J.; Mitchell, Edward; and Pellegrini, John P., Jr., to Gulf Research & Development Company. Method of removing oil from the surface of water and composition therefor. 3,696,051, Cl. 252-425.500.
McIntyre, John S.: *See—*
Harrod, John F.; Knight, Allan R.; and McIntyre, John S., 3,696,052.
McKinney, James C., to Grace, W. R., & Co. Corrugate-film laminate package material and package. 3,694,995, Cl. 53-30.000.
McKinney Manufacturing Company: *See—*
Gwozdz, Joseph W., 3,695,418.
McNeil Corporation: *See—*
Pamer, Karl A., 3,694,990.
McRae, David Milwain; and Watt, Andrew Douglas, to Hawker Siddeley Aviation Limited. Aircraft. 3,695,558, Cl. 244-83.00d.
Meadows, James H. Air-flow diverter for tractor-trailer rig. 3,695,673, Cl. 296-15.000.
Mego International, Inc.: *See—*
Houghton, Lionel, 3,694,957.
Meier-Windhorst, Christian August, to Artos D., Ing., Meier-Windhorst Kommanditgesellschaft. Moisture-and high-temperature treatment of fabrics before finishing operations. 3,695,826, Cl. 8-149.300.
Meinzer, Lester N.: *See—*
Walker, Grant W.; Ford, Duane B.; Meinzer, Lester N.; and Larsen, Reid S., 3,695,583.
Menegatto, Carlo. Dobby mechanism for looms. 3,695,304, Cl. 139-78.000.
M.E.P.P.S. Manufacture d'Engins de Precision pour Peches Sportives: *See—*
Modeme, Robert L., 3,694,951.
Merger, Franz: *See—*

Fuchs, Werner; and Merger, Franz, 3,696,005.

Mershon, Randolph J. Covered backwashers. 3,694,865, Cl. 24-95.000.

Mertens, Wolfgang, to Herzer, Kurt, Firma. Tilting device for head rest, in particular for vehicle seats. 3,695,699, Cl. 297-408.000.

Merz, Herbert: *See—*
Hennig, Karl-Friedrich; Reinecke, Erich; Merz, Herbert; Werner, Egon; Isernhagen, Fritz; Holthusen, Erwin; and Klatt, Alfred, 3,695,734.

Messer, Ernst; and Singewald, Arno, to Wintershall Aktiengesellschaft. Method of recovering underground deposits of soluble minerals, and apparatus for carrying out the method. 3,695,711, Cl. 299-2.000.

Messer. Griesheim G.m.b.H.: *See—*
Munch, Gerhard; and Jager, Albert, 3,695,600.

Messer, Mayer Naoum: *See—*
Jeanmart, Claude; and Messer, Mayer Naoum, 3,696,116.

Messerschmitt-Bolkow-Blohm Gesellschaft mit beschrankter Haftung: *See—*
Stetter, Gunter; and Reinemann, Ullrich, 3,695,180.

Meszaros, Zoltan; Knoll, Jozsef; and Szentmiklosi, Peter, to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara. Pharmaceutical compositions containing homopyrimidazole derivatives. 3,696,197, Cl. 424-251.000.

Metabowerke Kg Closs, Rauch & Schnizler: *See—*
Schnizler, Albrecht, Jr., 3,695,344.

Metal Improvement Company, Inc.: *See—*
Smith, Glenn D., 3,695,091.

Metal sliding window: *See—*
Gartner, Karl; and Gartner, Joseph, & Co., 3,694,959.

Metal-Matic, Inc.: *See—*
Mommsen, Adolph C., 3,695,645.
Momsen, Adolph C., 3,695,646.

Metcalf, Arnold; and Bateman, Willis. Steelmaking. 3,695,863, Cl. 75-60.000.

Metcalf, James F.; and Klingerman, Robert H., to Cragmet Corporation. Susceptor. 3,696,223, Cl. 219-10.490.

Metzdorf, Werner: *See—*
Egger, Viktor; Lill, Arnulf; and Metzdorf, Werner, 3,695,854.

Metzinger, Leonard L.: *See—*
Lawson, Robert R.; and Metzinger, Leonard L., 3,695,032.

Mevissen, Ernst A., to Dravo Corporation. Metal converting furnace apparatus. 3,695,602, Cl. 266-36.00p.

Meyer, Dolph Allan; Phelps, Ross Leslie; Sykes, Edward Henry; Clipsham, Ian Sweet; Seidel, David Paul; Gray, Donald; and Ractivand, Theodore Demetrius, to Victa Limited. Adjustable handle for lawnmowers. 3,694,855, Cl. 16-111.00a.

Meyer, Engelbert A., to USM Corporation. Solid cylindrical male fastener and structural assembly. 3,695,654, Cl. 287-189.36r.

Meyer, Gene P. Hair piece securing device. 3,694,819, Cl. 3-1.000.

Meyer, Gerhard: *See—*
Rupp, Hans-Dieter; Meyer, Gerhard; and Magerlein, Helmut, 3,695,832.

Meyer Manufacturing Inc.: *See—*
Meyer, Roy E.; and Stember, Daniel L., 3,696,241.

Meyer, Phillip A. Tractor attachment with variable speed drive unit. 3,695,716, Cl. 299-25.000.

Meyer, Roy E.; and Stember, Daniel L., to Meyer Manufacturing Inc. Light fixture tower. 3,696,241, Cl. 240-84.000.

Michael, Jacob F.: *See—*
Rainone, Nicholas J.; and Michael, Jacob F., 3,695,179.

Michael, Keith W.; and Dennis, William E., to Dow Corning Corporation. Method of producing 2-(chloromethyl)allyl substituted silanes. 3,696,138, Cl. 260-448.00e.

Michalowicz, Joseph C. Deductor for flow metering system and apparatus. 3,695,097, Cl. 73-113.000.

Micro-Miniature Parts Corporation: *See—*
Draving, Walter J.; and Draving, Robert C., 3,694,913.

Micro-Poise Engineering & Sales Company: *See—*
Smith, Thomas C., 3,695,114.

Midori-Kai Co., Ltd.: *See—*
Watanuki, Toshio, 3,695,751.

Midweco-Enterprise, Inc.: *See—*
Unger, David, 3,694,973.

Miekka, Richard George: *See—*
Carlson, Lee Allen; and Miekka, Richard George, 3,695,874.

Miescher, Guido M., to Commercial Solvents Corporation. Process for the production of alkaline proteinase. 3,696,000, Cl. 195-65.000.

Mikos, Aloysius J.; and Dlugosinski, Theodore, to Seng Company, The. Sofa sleeper with seat height adjustment. 3,694,828, Cl. 5-13.000.

Mikuni Kogyo Co., Ltd.: *See—*
Ishida, Takashi, 3,695,245.

Milbar Corporation: *See—*
Daniels, Charles M., Jr., 3,694,834.

Milette, Kenneth A., to Samsonite Corporation. Pushbutton combination locks. 3,695,072, Cl. 70-312.000.

Miller, Albert T., to Devro, Inc. Collagen pulp beverage texturizer. 3,695,890, Cl. 99-78.000.

Miller, Walter L.: *See—*
Bakker, Donavon L.; and Miller, Walter L., 3,695,415.

Mills Company, The: *See—*
Pollock, Gordon J., 3,694,975.

Minasy, Arthur J., to Knogo Corporation. Apparatus for article theft detection. 3,696,379, Cl. 340-280.000.

Minderhout, James R.: *See—*
Mayerle, Evan A.; and Minderhout, James R., 3,696,009.

Minnesota Mining & Manufacturing Company: *See—*
Feldhaus, James F., 3,695,934.

Minnich, George E.: *See—*
Howland, Robert W.; Minnich, George E.; and Van Fleet, Richard L., 3,694,930.

Mintray Limited: *See—*
Brown, Philip, 3,694,817.

Mintz, Maxie R. Post anchor. 3,694,978, Cl. 52-166.000.

Mintz, Michael D., to International Technidyne Corporation. Method and system for analyzing a liquid. 3,695,842, Cl. 23-230.00r.

Miquel, Jean: *See—*
Uuguin, Bernard; Le Page, Jean Francois; and Miquel, Jean, 3,696,167.

Miraldi, Peter Thomas, to American Sterilizer Company. Door assembly and chamber combination. 3,694,960, Cl. 49-209.000.

Mischke, Joachim: *See—*
Glos, Franz; and Mischke, Joachim, 3,696,010.

Mita Industrial Company Limited: *See—*
Washio, Takaji; Tohi, Yasusuke; and Aizawa, Tatsuo, 3,695,754.

Mita, Kunio, to Asahi Kogaku Kogyo Kabushiki Kaisha. Reflex camera with automatic exposure control. 3,695,159, Cl. 95-10.00c.

Mitchell, Edward: *See—*
McGuire, Robert J.; Mitchell, Edward; and Pellegrini, John P., Jr., 3,696,051.

Mitchell, John H. Remote control grapple carriage operated by yarding machine. 3,695,672, Cl. 294-112.000.

Mitchell, Roy O.; and Schmid, Hermann, to General Electric Company. High speed high accuracy sample and hold circuit. 3,696,305, Cl. 330-51.000.

Mitchell, Wallace F. Force measuring and indicating apparatus. 3,695,100, Cl. 73-141.00r.

Mitsubishi Denki Kabushiki Kaisha: *See—*
Kubota, Nobuo, 3,695,075.

Mitsubishi Jukogyo Kabushiki Kaisha: *See—*
Tateishi, Mataji, 3,695,784.

Mitsubishi Petrochemical Company, Limited: *See—*
Morikawa, Hiroyuki, 3,696,108.

Mitsui Shipbuilding and Engineering Co., Ltd.: *See—*
Ozawa, Tokuji; Uyeda, Mikio; Hashimoto, Ryosuke; and Suzuki, Shigenori, 3,696,166.

Mitsui Toatsu Chemicals, Incorporated: *See—*
Watanabe, Hiroo; Yamamoto, Koosuke; Abe, Takeshi; and Kawamata, Motoo, 3,695,830.

Mitsui, Tsutomu: *See—*
Sakashita, Hitoshi; and Mitsui, Tsutomu, 3,695,198.

Mittler, Werner: *See—*
Wirtz, Peter; Jacobowsky, Armin; and Mittler, Werner, 3,696,015.

Miura, Haruhisa: *See—*
Matsushita, Shigenori; Sato, Fumitaka; and Miura, Haruhisa, 3,696,340.

Miyadera, Tetsuo: *See—*
Tachikawa, Ryuji; Takagi, Hiromu; Kamioka, Toshiharu; Fukunaga, Mitsunobu; Kawano, Yoichi; and Miyadera, Tetsuo, 3,696,094.

Miyakado, Satoru: *See—*
Sugawara, Tsunenori; Shibuya, Teiji; Miyakado, Satoru; and Mase, Jiro, 3,695,466.

Miyakawa, Seinan, to Asahi Kogaku Kogyo Kabushiki Kaisha. Camera controls. 3,695,157, Cl. 95-10.0ct.

Miyamatsu, Tsugio: *See—*
Kimura, Hiroshiro; Arimoto, Heiji; Nara, Hirohisa; Miyamatsu, Tsugio; and Kitajima, Mitsuo, 3,695,306.

Miyano, Masateru, to Searle, G. D., & Co. 11,15-Dihydroxy-9-oxoprosta-8(12),13-dienoic acids and intermediate. 3,696,144, Cl. 260-514.000.

Miyaoka, Senri, to Sony Corporation. Cathode ray tube with plural beams for each color element. 3,696,261, Cl. 313-69.00c.

Mizutani, Katsushi, to Kabushiki Kaisha Rinnai Seisakusho. Radiant burner. 3,695,818, Cl. 431-328.000.

MMM Munchener Medizin Mechanik GmbH: *See—*
Koller, Johann, 3,694,830.

Mobil Oil Corporation: *See—*
Blount, Elmo M.; and Prueger, Nicolas J., 3,695,358.
Commichau, Axel Klaus, 3,696,036.
Guinzy, Norman J.; Kerns, Clyde W.; Ruehle, William H.; and Teague, Henry E., 3,696,331.
Mc Alpin, Silvan E., 3,696,326.
Strong, Jerry G., 3,696,199.
Ward, Charles F., 3,696,365.

Modeme, Robert L., to M.E.P.P.S. Manufacture d'Engins de Precision pour Peches Sportives. Fishing float. 3,694,951, Cl. 43-41.200.

Moffa, Dominick. Cigarette extinguisher. 3,695,277, Cl. 131-235.00r.

Mogi, Koya: *See—*
Uchida, Kinji; Mogi, Koya; and Yokotsuka, Tamotsu, 3,695,897.

Mogi, Yuuji: *See—*
Nishino, Tsutomu; and Mogi, Yuuji, 3,696,266.

Mogilner, Geoffrey A.: *See—*
Mogilner, Geoffrey A.; and Johnson, Rodney D. (said Johnson assor. to said), 3,695,617.

Mogilner, Geoffrey A.; and Johnson, Rodney D., said Johnson assor. to said Mogilner, Geoffrey A. Tensegrity structure puzzle. 3,695,617, Cl. 273-156.000.

Mohr, Robert G., to Tartra Corporation. Ganging and stacking chair. 3,695,694, Cl. 297-248.000.

Moisson-Franckhauser, Francois, to Compagnie Generale d'Electricite. Cryostat current supply. 3,695,057, Cl. 62-514.000.

Moller, George O.: *See—*
Tobey, Hubert E.; Moller, George O.; and Twiford, Richard L., 3,695,411.

Mommsen, Adolph C., to Metal-Matic, Inc. Ball and socket pipe joint utilizing two resilient fingers with clip spring reinforcement. 3,695,645, Cl. 285-261.000.

Momsen, Adolph C., to Metal-Matic, Inc. Ball and socket pipe joint with clip spring. 3,695,646, Cl. 285-261.000.

Monitor Cabinets, a division of Comerco, Inc.: *See—*
Bucholz, Allan A., 3,695,190.

Monsanto Chemicals Limited: *See—*
Burt, Patrick V., 3,696,060.

Monsanto Company: *See—*
Arrant, Kearney D., 3,695,222.
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Morey Corporation, The: *See—*
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Morgan, Thomas E.: *See—*
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Mori, Minoru; and Kishikawa, Toshiro, to Fuji Shashin Koki Kabushiki Kaisha. Optical system for a color television camera. 3,696,202, Cl. 178-5.4st.

Mori, Takao, to Inouye Kinzoku Kogyo Kabishiki Kaisha. Filter belt with means forming therewith plural pressure filter chambers. 3,695,440, Cl. 210-225.000.

Morikawa, Hiroyuki, to Mitsubishi Petrochemical Company, Limited. Production of isoprene dimers. 3,696,108, Cl. 260-677.00r.

Moritz, Walter D. Artificial skeletal joint. 3,694,821, Cl. 3-1.000.

Morris, Carolyn Ethel Mary, to Imperial Chemical Industries Limited. Process for improving the adhesion of polyolefin surfaces. 3,695,915, Cl. 117-47.00a.

Morris, Douglas Barrett: *See—*
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Morris, Ross E., to United States of America, Navy. Plasticized compositions. 3,696,066, Cl. 260-23.70h.

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Morton-Norwich Products, Inc.: *See—*
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Motorola, Inc.: *See—*
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Mott, Ludwig; Muller, Richard; Dinges, Karl; and Krauss, Heinz-Walter, to Farbenfabriken Bayer Aktiengesellschaft. Thermosetting reflow resins of copolymers of alkyl methacrylates. 3,696,063, Cl. 260-17.00r.

Mott, Willard, to Shell Oil Company. Automatic engine starter. 3,696,333, Cl. 340-52.00r.

Moulds, Gordon M., to Du Pont de Nemours, E. I., and Company. Porous aromatic polyamide fiber. 3,695,992, Cl. 161-178.000.

Moyroud, Louis M. Photocomposing machine. 3,695,156, Cl. 95-4.500.

Mr. Culloch Corporation: *See—*
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Mueller, Herbert; and Mangold, Dietrich. Production of 2-methyl-3-buten-2-ol. 3,696,155, Cl. 260-642.000.

Mukai, Kazue: *See—*
Mukai, Kazue; and Odahara, Hisao (said Odahara assor. to said), 3,694,947.

Mukai, Kazue; and Odahara, Hisao, said Odahara assor. to said Mukai, Kazue. Picture frame. 3,694,947, Cl. 40-152.000.

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Muller, Willy, to Schloemann Aktiengesellschaft. Means for forging large shell rings E. G. for boiler shells. 3,695,079, Cl. 72-208.000.

Munch, Gerhard; and Jager, Albert, to Messer. Griesheim G.m.b.H. Apparatus for flame scarfing the surfaces of crude blocks, billets, ingots and similar workpieces. 3,695,600, Cl. 266-23.00h.

Munnich, Hermann; and Markert, Franz, to S K F Kugellagerfabriken G.m.b.H. Mounting of roller bearings. 3,695,391, Cl. 184-1.00e.

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Murphy, John D. Portable alarm device. 3,696,380, Cl. 340-283.000.

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Myers, Herman A. Wrench head. 3,695,124, Cl. 81-121.00r.

Nagasaki, Michisuke, to Yanmar Diesel Engine Co., Ltd. Reverse and reduction gear for ships. 3,695,401, Cl. 192-21.000.

Nagel, Hans. Modular candelabrum. 3,695,458, Cl. 211-177.000.

Nagele, Karl F., Feinmaschinenbau: *See—*
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National Patent Development Corporation: *See—*
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National Research Development Corporation: *See—*
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Nayfa, James E. Cotton gin rib. 3,694,857, Cl. 19-62.000.

Nealon, Ivan W. Approach computer for aircraft. 3,695,034, Cl. 58-152.20r.

Neary, Robert J.: *See—*
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Nelson, Gunner E., to Ethyl Corporation. Chemical reducing agents of enhanced hydrocarbon solubility. 3,696,047, Cl. 252-188.000.

Nelson, Gunner E., to Ethyl Corporation. Method of stabilizing sodium aluminum diethyl hydride. 3,696,136, Cl. 260-448.00a.

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Neuzil, Richard W. Hydrocarbon separation process. 3,696,107, Cl. 260-674.50a.

Newman, Douglas A.: *See—*
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Nishihara, Yoshio. Carbureter of the overflow type. 3,695,590, Cl. 261-36.00a.
Nishino, Tsutomu; and Mogi, Yuuji. Electron beam deflecting device. 3,696,266, Cl. 315-3.000.
Nissan Motor Company Limited: *See—*
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Noble, Robert L., to Fowler, Knobbe & Martens. Cottering device. 3,695,140, Cl. 85-8.300.
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Norris, Leon F., to Sherritt Gordon Mines Limited. Preparation of powder metallurgy compositions containing dispersed refractory oxides and precipitation hardening elements. 3,695,868, Cl. 75-206.000.
North American Rockwell Corporation: *See—*
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Nussbaum, Hans-Georg. Circuit arrangement for controlling cathode-ray tubes for the display of alpha-numerical characters. 3,696,387, Cl. 340-324.00a.
Nylen, Roland, to Allmanna Svenska Elektriska Aktiebolaget. Mechanism for testing electrical equipment. 3,696,296, Cl. 324-158.00p.
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Oeppen, Brian; Edmondson, John; and Sourbutts, Stanley, to Gas Council, The. Self-recuperative burners. 3,695,816, Cl. 431-166.000.
Oetiker, Jakob. Optical element for illumination. 3,694,945, Cl. 40-133.00r.
Office National d'Etudes et de Recherches: *See—*
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Okuda, Kensuke; Yoshida, Tadaaki; and Sugawara, Katsuyuki, to Kureha Kogaku Kogyo Kabushiki Kaisha. Method for opening rigid fibers. 3,694,862, Cl. 19-58.000.
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Olsen, Benny; and Olsen, Zenny, to Allied Control Company, Incorporated. Rotary input/feedback mechanical servo valve. 3,695,295, Cl. 137-625.690.
Olsen, Howard E.: *See—*
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Olsson, Billy E., to Berg Electronics, Inc. Flat conductor cable connector. 3,696,319, Cl. 339-17.00f.
Olsson, Sven O. Container spout. 3,695,488, Cl. 222-570.000.
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Orr, Alexander L., to Renton Engineering Company. Photolithographical image processing apparatus. 3,695,760, Cl. 355-95.000.
Orshansky, Elias, Jr., to URS Corporation. Hydrostatic motor or pump and hydrostatic transmissions. 3,695,146, Cl. 91-478.000.
Ortel, William Charles Gormley, to Bell Telephone Laboratories, Incorporated. Contrast in computer generated photoetching masks. 3,695,875, Cl. 96-27.000.
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Osteen, Mitchell M. Air filter device. 3,695,009, Cl. 55-385.000.
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Otani, Yasuhiko; and Ikegami, Yoshio, to Kobe Steel, Ltd. Apparatus for continuously winding up linear products such as wire. 3,695,526, Cl. 242-25.00a.
Otero, Richard J. Broadcast communication system including a plurality of subscriber stations for selectively receiving and reproducing one or more of a plurality of transmitted programs each having a unique identifying code associated therewith. 3,696,29, Cl. 325-55.000.
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Papajewski, Reinhold; and Kleinschmidt, Johann, to Singer Company, The, mesne. Thread-pull-off and wiping mechanism for sewing machines. 3,695,200, Cl. 112-242.000.
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Paper Converting Machine Company, Inc.: *See—*
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Parker, Eric George, to General Motors Corporation. Mechanism for opening and closing a cover for a concealed windshield wiper system. 3,694,846, Cl. 15-250.160.
Parker, John C.; and Johnson, Keith M., to Mattel, Inc. Wheel and axle assembly having an entrapped thrust bearing. 3,694,958, Cl. 46-201.000.
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Parrini, Paolo: *See—*
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Parsons, John F.: *See—*
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Parsons, Ronald W., to Allcock, Laight & Westwood Limited. Carriage for skis. 3,695,495, Cl. 224-29.00r.
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Patmore, Edwin L.; Siegart, William R.; and Chafetz, Harry. Carboxylation of acetylenic compounds. 3,696,146, Cl. 260-515.00r.
Patry, Leon R. Connector for a post-mounted lighting fixture. 3,696,242, Cl. 240-84.000.
Paul, Claude; and Cheron, Henri, to Azote et Produits Chimiques. Magnesia supports for catalysts in hydrocarbon reforming. 3,695,856, Cl. 48-214.000.
Pazhia, Vincent B.; and Bossler, Franklin B., to Textron, Inc. Quiet jet discharge nozzle. 3,695,388, Cl. 181-33.00f.
Pearson, Samuel J.: *See—*
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Pedersen, Norman E., to Panametrics, Inc. Signal processor. 3,696,417, Cl. 343-7.700.
Peery, Walter E. Frictional torque transferring apparatus with a liquid mercury cooling system. 3,695,407, Cl. 192-113.00b.
Pellegrini, John P., Jr.: *See—*
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Pelosi, Stanford S., Jr.: *See—*
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Pennella, Paolo: *See—*
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Perdue, Richard R.; Hoagland, Le Roy F.; and Kuehne, Richard O., to Grace, W. R., & Co. Vacuum skin package and process and apparatus for making same. 3,694,991, Cl. 53-22.00a.
Perga, Martin W.; and De Palma, Ted V. Self-cleaning catalytic converter. 3,695,850, Cl. 23-288.00f.
Perga, Martin W., to Universal Oil Products Company. Exhaust gas catalytic converter. 3,695,851, Cl. 23-288.00f.
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Perkins, Earl Stuart, to Butler National Corporation. Navigation system for improving noisy signals. 3,696,425, Cl. 343-107.000.
Perkins, Earl Stuart, to Butler National Corporation. Rectilinear navigation system. 3,696,426, Cl. 343-107.000.
Peronneau, Georges, to Thomson-CSF Visualisation et Traitement des Indormations (T.V.T.). System for the display of synthesized graphic smybols. 3,696,391, Cl. 340-324.00a.

Perron, Yvon G.; and Douglas, James L., to Bristol-Myers Company. Process for the preparation of 1-indancarboxylic acids. 3,696,145, Cl. 260o515.00r.

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Persson, Anders: *See—*
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Pesch, Albert Tho; and Maassen, Wilhelm, to Reiner, Walter. Driver drum in yarn winding machines. 3,695,522, Cl. 242-18.0dd.

Peters, Theodore F., to General Motors Corporation. Seat belt retractor. 3,695,545, Cl. 242-107.400.

Petersen, Richard E.: *See—*
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Petersen, Svend Aage: *See—*
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Petersen, William H., to Shell Oil Company. Method and apparatus for connecting flowlines to underwater wellheads. 3,695,350, Cl. 166-.500.

Peterson, James W.; and Tempka, John A., to Motorola Inc. Data transferring system utilizing a monitor channel and logic circuitry to assure secure data communication. 3,696,210, Cl. 179-15.0bf.

Peterson, Rex W. Valve shock dampener. 3,695,241, Cl. 123-90.450.

Peterson, Rudolph G.: *See—*
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Petit, Robert. Continuous casting machine with controlled extractor movement. 3,695,342, Cl. 164-268.000.

Petrol Injection Limited: *See—*
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Petry, Robert J.: *See—*
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Pfeiffer, Paul O.; and Grucella, Frank J., to General Tire & Rubber Company. Method of producing an improved inner tube. 3,695,961, Cl. 156-122.000.

Pfender, Emil, to PPG Industries, Inc. Method of preparing metal oxides with arc gas heaters. 3,695,840, Cl. 23-202.00v.

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De Vault, Albert N., 3,696,088.
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Pifferi, Giorgio, to Gruppo Lepetit S.p.A. Substituted 2-benzoyl- and 2-cinnamoyl-isoxazolidines. 3,696,096, Cl. 260-240.00j.

Pike, Roscoe A., to United Aircraft Corporation. Process for regenerating surface activity in oxidatively treated graphite fibers. 3,695,916, Cl. 117-47.00r.

Pilch, Kurt: *See—*
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Pittman, Forrest C., to Halliburton Company. Apparatus and method for pipeline testing. 3,695,301, Cl. 138-97.000.

Pitts, Bobby L. Textile package adaptor. 3,695,561, Cl. 242-46.400.

Pitts, Curtis H. Biplane construction. 3,695,557, Cl. 244-45.00r.

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Ploughman, Leonard K., to Atwood Vacuum Machine Company. Latch for vehicle doors. 3,695,662, Cl. 292-216.000.

Pluckhahn, Patrick J. Sawing timber. 3,695,316, Cl. 143-32.000.

Pogonowski, Ivo C.; and Carmichael Paul D., to Texaco Inc. Underwater liquid storage facility. 3,695,047, Cl. 61-46.500.

Pogorski, Louis A., 55% to Gulf Oil Canada Limited, and and 45% to Chemical Projects Limited. Thermal insulation and thermally insulated device. 3,695,483, Cl. 220-9.00c.

Polar Ware Company: *See—*
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Polaroid Corporation: *See—*
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Policlinica de Stomatologie Protetica: *See—*
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Polin, Jerry, to Alco Standard Corporation. Method for applying a flowable substance to a workpiece. 3,695,911, Cl. 117-34.000.

Pollock, Gordon J., to Mills Company, The. Partition structure. 3,694,975, Cl. 52-36.000.

Pomella, Piero; Baratto, Elia; and Lauro, Luciano, to Olivetti, Ing. C., & C., S.p.A. Analog to digital converters having multiple units of measurement. 3,696,398, Cl. 340-347.0ad.

Pommier, Pierre, to Societe Anonyme dite: CEFILAC. Method of setting fire rings in cylinder head gaskets. 3,694,889, Cl. 29-412.000.

Pool, Morris F.: *See—*
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Possberg, Jobst; Rostock, Kai; Nickl, Eligius; Otmar, Zajicek; and Helmut, Klapp. Process for the preparation of polyvinyl chloride polymerizates suitable for vinyl pastes. 3,696,079, Cl. 260-78.5cl.

Post, Hendrik Alle: *See—*
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Post Office, The: *See—*
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Postlethwaite, Harvey Ernest, to Imperial Chemical Industries Limited. Carburettor containing porous material e.g. foamed plastic. 3,695,593, Cl. 261-96.000.

Potter, Roderick B., to Kelley Company, Inc. Light fixture for a loading dock. 3,696,240, Cl. 240-73.0bj.

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Preiskel, David. Bricklaying devices. 3,695,571, Cl. 249-53.000.

Preiss, Richard B., to Tektronix, Inc. Data terminal-computer serial interface system having automatic Baud rate switching. 3,696,338, Cl. 340-172.500.

Prescott, Burnerd Clark. Disc and sidebar cylinder lock. 3,695,073, Cl. 70-366.000.

Presley, C. Travis: *See—*
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Pugh, Mary A. Portable shampooing unit. 3,694,826, Cl. 4-159.000.
Pugliese, Joseph A., to Hoke Incorporated. Pipe coupling. 3,695,647, Cl. 285-341.000.
Pullan, Ronald C., to Knape & Vogt Manufacturing Company. Bracket construction. 3,695,569, Cl. 248-235.000.
Pullman, James O.; and Weidlich, William R., to Liggett & Myers Incorporated. Relative carbon content meter for smoke filters. 3,696,299, Cl. 324-61.00r.
Pulsifer, Gary Raymond. Holder device for infant's nursing bottle. 3,696,233, Cl. 219-535.000.
Pussell, Clarence R. Electrically operated temperature sensing assembly. 3,695,112, Cl. 73-362.0ar.
Putnam, Monroe P. Reversible chair with a reversible cushion cover. 3,695,691, Cl. 297-223.000.
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Quayle, Joshua Creer; and Greatrix, Graham Roland. Apparatus for the detection of mastitis in milk animals. 3,695,230, Cl. 119-14.140.
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Raes, Andre, to Glaverbel S.A. Handling device. 3,695,459, Cl. 214-1.00q.
Rainone, Nicholas J.; and Michael, Jacob F., to Westinghouse Electric Corporation. Electrically-actuable ignitor for passenger restraint system employing an inflatable cushion. 3,695,179, Cl. 102-70.20r.
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Randolph, Alan D.; and Crawford, Rufus W., to Battelle Development Corporation, The, mesne. Sucrose nucleation composition and method of preparation. 3,695,932, Cl. 127-30.000.
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Rasmussen, Reed. Camper loading and unloading device. 3,695,472, Cl. 214-517.000.
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Ratnikas, Jonas, to Ford Motor Company. Actuator rod connector. 3,695,652, Cl. 287-93.000.
Rau, Winfried, to J. Strobel & Soehne, Spezial-Naehmaschinen-Fabrik. Apparatus for felling linings on fur garments. 3,695,197, Cl. 112-177.000.
Raue, Roderich; and Wolf, Karlheinz, to Farbenfabriken Bayer Aktiengesellschaft. Solutions containing a basic dyestuff and an α-or β-hydroxy- or loweralkoxy loweralkylnitrile. 3,696,089, Cl. 260-156.000.
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Rehberg, Rolf. Dyeing human hair with isoxazolone coupling component. 3,695,824, Cl. 8-10.200.
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Richter, Hans H., to Leesona Corporation. Twister and method of twisting. 3,695,020, Cl. 57-77.400.
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Rogers, Dow A., Jr., to Westinghouse Electric Corporation. Novel micaceous insulation. 3,695,984, Cl. 161-93.000.
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Rolauffs, Hans; Hoven, Hubert; Hippel, Hans; and Schafer, Max, to Maschinenfabrik Carl Zangs Aktiengesellschaft. Shuttle embroidering machine. 3,695,199, Cl. 112-221.000.
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Rottering, Quintin N., to Maytag Company, The. Token-actuated control circuit. 3,695,409, Cl. 194-4.00c.
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Runton, Leslie A., to Stevens, J. P., & Co., Inc. Apparatus for imparting stretch characteristics to woven fabrics. 3,695,064, Cl. 68-5.00e.
Rupp, Hans-Dieter; Meyer, Gerhard; and Magerlein, Helmut. Process for reducing the thiourea and sulfate content of alkali- and alkaline earth metal rhodanides. 3,695,832, Cl. 423-366.000.
Russell, Robert G., to Owens-Corning Fiberglas Corporation. Method and apparatus for production of glass fibers. 3,695,858, Cl. 65-2.000.

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Salinger, Fred G., to Baxter Laboratories, Inc. Range apparatus. 3,696,232, Cl. 219-451.000.
Salomon, Georges Pierre Joseph, to S.A. Francois Salomon et Fils. Ski boot. 3,694,937, Cl. 36-2.5al.
Salomon, Georges Pierre Joseph. Ski binding. 3,695,625, Cl. 280-11.35t.
Salyer, Walter; and Huffaker, James E. Method of producing autostereo pictures. 3,695,878, Cl. 96-40.000.
Salzmann, Willi. Crank assemblies for machines having reciprocating pistons. 3,695,150, Cl. 92-169.000.
Sams, Ronald G. Survival bag. 3,695,507, Cl. 229-53.000.
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Sattler, Frank A., to Westinghouse Electric Corporation. Conductors insulated with a polymeric amide-imide-ester and an aromatic polyimide or aromatic polyamide-imide overcoat. 3,695,929, Cl. 117-218.000.
Saunders, John Allen, to Research Association of British Paint, Colour & Varnish Manufacturers, The. Paint compositions. 3,696,054, Cl. 252-511.000.
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Schmidt, Henry Jr., to Industrial Filter & Pump Mfg. Co. Filter apparatus. 3,695,443, Cl. 210-315.000.

Schmidt, Henry, Jr.; Crain, Richard W.; and Zievers, James F., to Industrial Filter & Pump Mfg., Co. Skimming device. 3,695,451, Cl. 210-526.000.

Schmitt, Henri Francois Marie; and Marande, Claude, to Societe de l'Aerotrain. Devices for supplying the pressurised fluid cushions of a ground-effect vehicle. 3,695,382, Cl. 180-116.000.

Schmunk, John D., to Hancock Brick & Tile Company, The. Corrugated tube coupling means. 3,695,643, Cl. 285-156.000.

Schnaebel, Eberhard; Fleischer, Helmut; Zechnall, Richard; Domann, Helmut; Maisch, Wolfgang; and Christ, Klaus, to Bosch, Robert, G.m.b.H. Arrangement for preventing the skidding of wheels of a motor vehicle. 3,696,270, Cl. 317-5.000.

Schneider, Willy. Repair piece for automobile bodies. 3,695,796, Cl. 425-12.000.

Schneider, Wolfgang, to Goodrich, B. F., Company, The. Preparation of 5-ethylidenebicyclo(2.2.1) hept-2-enes. 3,696,157, Cl. 260-666.0py.

Schnizler, Albrecht, Jr., to Metabowerke Kg Closs, Rauch & Schnizler. Heat insulation means for power tools. 3,695,344, Cl. 165-147.000.

Schoonover, Stanley C.; and Luckenbach, Lester R., to Litton Industries, Inc. Offset size adjustment circuit for grinding machines. 3,694,970, Cl. 51-165.710.

Schrage, Albert; and Finestone, Arnold B., to Dart Industries Inc. Synergistic blends of modified polyolefins and unmodified polyolefins. 3,696,069, Cl. 260-41.00r.

Schrage, Albert; and Readio, Philip D., to Dart Industries Inc. Modified polyolefin containing reaction unsaturated oxirane in the presence of the polyolefin and peroxide. 3,696,169, Cl. 260-836.000.

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Schumacher, Heinz Otto. Process and apparatus for de-sliming vegetable oils. 3,696,030, Cl. 210-21.000.

Schuman, Mark. Temporary tire for automotive vehicles. 3,695,325, Cl. 152-225.000.

Schussler, Hans-Joachim; and Scharf, Rolf, to Henkel & Cie G.m.b.H. Anti-foaming compositions and cleaning compositions containing them. 3,696,057, Cl. 252-544.000.

Schwaiger, John E. Anti-theft device for trailer. 3,695,631, Cl. 280-507.000.

Schwartz, Bernard Paul Manfred. Mounting of sealed double glazing units. 3,694,984, Cl. 52-398.000.

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Caron, Jean, 3,695,151.

Sesky, Julius; and Clark, Charles J. Traction attachment for vehicles. 3,695,727, Cl. 301-43.000.

Sevenich, Theodor; Zahn, Friedrich; and Zens, Peter, to Maschinen- und Werkzeugbau GmbH. System for the replacement of rolling-mill rolls. 3,695,080, Cl. 72-239.000.

Sew Fit Co.: *See*—
Oblander, Ruth, 3,694,921.

Shaines, Alfred; Kalish, Robert L.; and Hamer, Edward A. G., to Abcor Water Management Company, Inc., mesne. Support for semi-permeable membrane. 3,695,964, Cl. 156-161.000.

Shaltis, Robert J., to Hastings Manufacturing Company. Oil Filter with improved anti-drainback valve. 3,695,437, Cl. 210-136.000.

Shank, Joseph L. Edible films and casings of collagen and casein. 3,695,902, Cl. 99-176.000.

Shannon, John K., to Quick Cable Corporation. Method of making battery post terminal clamp. 3,695,336, Cl. 164-98.000.

Shano, Charles L. Electrical pulse source including a movable control element varying the reluctance of a magnetic field through a winding connected to a difference amplifier of a signal processing circuit. 3,696,257, Cl. 307-309.000.

Sharan, Harendra Nath, to Sulzer Brothers Limited. Muffle burner. 3,695,817, Cl. 431-178.000.

Sharp, Paul H., to Columbia Broadcasting System, Inc. Variable distance doppler generator. 3,695,385, Cl. 181-31.00b.

Shaw, Robert F.: *See*—
Feinleib, Julius; and Shaw, Robert F., 3,696,344.

Sheba, Helen. Adjustable garment shape-retaining hanger. 3,695,492, Cl. 223-94.000.

Shedyak, Albert T., to Curtis & Marble Machine Company. Cradle. 3,695,533, Cl. 242-55.000.

Sheetz, Charles E., to FMC Corporation. Apparatus for delivering singulated fruit, weighing and bagging it. 3,695,371, Cl. 177-59.000.

Shell Oil Company: *See*—
Colby, Thomas H., 3,696,176.
Dilgren, Richard E.; and Drinkard, Gary, 3,695,354.
Mott, Willard, 3,696,333.
Petersen, William H., 3,695,350.
Steveninck, Johannes Van, 3,695,049.
Thompson, Cullen R., 3,695,714.
Wise, Harold L.; Walters, Arley; and Cook, Ray G., 3,695,844.

Shelley, Meville L., to Redifon Limited. Visual simulation apparatus. 3,694,938, Cl. 35-12.00n.

Shenderov, Lev Borukhovich: *See*—
Khripkov, Alexandr Vasilievich; Shenderov, Lev Borukhovich; and Kazarinov, Igor Borisovich, 3,695,334.

Shepelyakovsky, Konstantin Zakharovich: *See*—
Kalner, Veniamin Davidovich; Orlovsky, Anatoly Georgievich; Ostrovsky, Grigory Arkadievich; Ryskind, Alexandr Moiseevich; Semenov, Viktor Nikolaevich; Stepin, Anatoly Loginovich; Surov, Mikhail Andreevich; Shepelyakovsky, Konstantin Zakharovich; and Shklyaov, Isaak Nakhimovich, 3,696,225.

Shepherd, Thomas H.; and Gould, Francis E., to National Patent Development Corporation. Method of coating a catheter. 3,695,921, Cl. 117-72.000.

Sherritt Gordon Mines Limited: *See*—
Norris, Leon F., 3,695,868.

Shibuya, Teiji: *See*—
Sugawara, Tsunenori; Shibuya, Teiji; Miyakado, Satoru; and Mase, Jiro, 3,695,466.

Shiina, Naonori: *See*—
Hosoda, Kirokuro; Shiina, Naonori; Kadowaki, Yoshio; and Nakae, Hiroyuki, 3,696,059.

Shimamura, Isao: *See*—
Yamamoto, Nobuo; Hatano, Tadao; Shimamura, Isao; and Iwano, Haruhiko, 3,695,883.

Shimizu, Hiroshi: *See*—

Kaiho, Isao; Shimizu, Hiroshi; and Osuka, Hiroshi, 3,696,172.

Shinbara, Hideo: *See—*
Sakomura, Toshio; Yoshida, Toshiro; Fujita, Yoshihiro; and Shinbara, Hideo, 3,696,173.

Shire, Harold; and Newman, Ira R., to General Connectors Corporation. Connector. 3,695,639, Cl. 285-114.000.

Shiuh, Hsuing: *See—*
Chung, Jerome; and Shiuh, Hsuing, 3,695,763.

Shklyarov, Isaak Nakhimovich: *See—*
Kalner, Veniamin Davidovich; Orlovsky, Anatoly Georgievich; Ostrovsky, Grigory Arkadievich; Ryskind, Alexandr Moiseevich; Semenov, Viktor Nikolaevich; Stepin, Anatoly Loginovich; Surov, Mikhail Andreevich; Shepelyakovsky, Konstantin Zakharovich; and Shklyaov, Isaak Nakhimovich, 3,696,225.

Shoemaker, Edwin J.: *See—*
Knabusch, Edward M.; Shoemaker, Edwin J.; and White, David B., 3,695,701.

Shoptaugh, Philip L. Board game apparatus. 3,695,615, Cl. 273-130.00r.

Shorthouse, Barry Owen: *See—*
Eccles, Anthony John; Mant, Alistair Donald; and Shorthouse, Barry Owen, 3,695,115.

Showa Electric Wire & Cable Co., Ltd.: *See—*
Suzuki, Munehiko; Hosokawa, Etsuo; Waki, Misao; and Fukushima, Masatada, 3,696,077.

Shuffler, Eustace Cosmo: *See—*
Rodwin, Stephen Anthony; and Shuffler, Eustace Cosmo, 3,694,926.

Shulzhenko, Alexandr Alexandrovich: *See—*
Bakul, Valentin Nikolaevich; Prikhna, Alexei Iosifovich Alexei; Shulzhenko, Alexandr Alexandrovich; and Gerasimovich, Alexei Vladimirovich, 3,695,797.

Sie, Tjwan Khing; and Post, Hendrik Alle. Flexibly deformable stopper for a hypodermic syringe. 3,695,478, Cl. 215-52.000.

Siegart, William R.: *See—*
Patmore, Edwin L.; Siegart, William R.; and Chafetz, Harry, 3,696,146.

Siegfried, Sommer: *See—*
Lederer, Michael; and Siegfried, Sommer, 3,696,085.

Siemens Aktiengesellschaft: *See—*
Ciska, Manfred; and Hubner, Klaus, 3,696,277.
Egger, Viktor; Lill, Arnulf; and Metzdorf, Werner, 3,695,854.
Eggert, Heinz; and Schillmann, Ekkehard, 3,694,908.
Emeis, Reimer, 3,694,972.

Siemonsen, Frederik A.; and Bublitz, Robert F., to Reynolds Metals Company. Nestable container and apparatus for and method of making same. 3,695,084, Cl. 72-348.000.

Sienkiewicz, Boleslaw; and Bagley, Ferdinand A., to General Foods Corporation. Process and apparatus for agglomeration. 3,695,165, Cl. 99-236.00c.

Sieron, Richard L., to Dual-Lite Company. Low electrolyte level alarm devices. 3,696,362, Cl. 340-244.00c.

Siesennop, W. Wayne; Gibbs, Norman E.; and Bartz, Edward S., to Rex Chainbelt Inc. Hydraulic pump or motor. 3,695,147, Cl. 91-498.000.

Signetics Corporation: *See—*
Davis, Stanley Paul, 3,696,274.

Silver, Arnold H.; and Zimmerman, James E., to Ford Motor Company. Superconducting constant voltage generator. 3,696,287, Cl. 323-7.000.

Silver, Floyd G.: *See—*
Cruger, Robert W.; and Silver, Floyd G., 3,695,559.

Silvey, Elmer R. Saw chain grinding machine. 3,695,123, Cl. 76-43.000.

Simmonds Precision Products, Inc.: *See—*
Lang, Walter T., 3,696,400.

Simon-Vermot, Andre, to Les Fabriques d'Assortiments Reunies. Method of manufacturing an escapement lever for a timepiece. 3,694,885, Cl. 29-177.000.

Simplimatic Engineering Co.: *See—*
East, Jerry L., 3,694,993.

Simpson, James E. Attachable container closure. 3,695,504, Cl. 229-7.000.

Sims, Robert J., to Westinghouse Electric Corporation. Suds saving system for automatic washer. 3,695,291, Cl. 137-571.000.

Sincerbox, Glenn T.: *See—*
Laming, Frank P.; Levine, Solomon L.; and Sincerbox, Glenn T., 3,695,879.

Singer Company, The: *See—*
Hasbrouck, Gene B., 3,695,330.

Singer Company, The, mesne: *See—*
Friedman, David; and Segal, Bernard Mortimer, 3,694,935.
Howland, Robert W.; Minnich, George E.; and Van Fleet, Richard L., 3,694,930.
Papajewski, Reinhold; and Kleinschmidt, Johann, 3,695,200.

Singewald, Arno: *See—*
Messer, Ernst; and Singewald, Arno, 3,695,711.

Skrabek, Emanuel Andrew; and Trimmer, Donald Smith, to Teledyne, Inc. Thermoelectric alloys. 3,695,867, Cl. 75-134.00g.

Skvortsov, Georgy Alexandrovich: *See—*
Kandelaki, David Georgievich; Chargeishvili, Tengiz Sergeevich; and Skvortsov, Georgy Alexandrovich, 3,695,977.

Slaverns, Wayne Eldon: *See—*
Bichel, Darwin Carl; Malcolm, Robert La Verne; and Slaverns, Wayne Eldon, 3,695,627.

Slayton, Jack E.; and Whipp, Eugene F. Dispenser cap. 3,695,487, Cl. 222-430.000.

Sloan Valve Company: *See—*
Billeter, Henry R.; and Allen, Charles S., 3,695,288.

Smalley, Rodney Roger: *See—*
Current, John Marvin; and Smalley, Rodney Roger, 3,695,965.

Smets, Georges Joseph: *See—*
Hoefnagels, Jan Antonius; Hiatt, Norman A.; and Smets, Georges Joseph, 3,696,098.

Smilg, Benjamin: *See—*
Isaacson, Max; and Smilg, Benjamin, 3,694,968.

Smith, Andrew I.; and Bryan, Roland J., Jr., to Monsanto Company. Antistatic nylon filaments. 3,696,078, Cl. 260-78.00s.

Smith, Colin, to Lummus Company, The. Pressure vessel seal. 3,695,482, Cl. 220-46.0ms.

Smith, David R., to Staley, A. E., Manufacturing Company. Vinylidene chloride long chain alkyl ester polymers. 3,696,082, Cl. 260-80.800.

Smith, Donald J.; and Foster, Seth, to Smith-Schreyer & Assoc., Inc. Telephone patch system. 3,696,320, Cl. 339-18.00b.

Smith, Glenn D., to Metal Improvement Company, Inc. Method of and apparatus for measuring intensity of peening in small diameter holes. 3,695,091, Cl. 73-11.000.

Smith, John D.: *See—*
Barnett, Joseph; and Smith, John D., 3,695,670.

Smith, John R., to Alamance Industries, Inc. Maternity panty hose garment and method. 3,694,816, Cl. 2-224.00r.

Smith, Raymond L., Jr.: *See—*
Weisker, Alexander; and Smith, Raymond L., Jr., 3,695,463.

Smith, Richard E., to Xerox Corporation. Sheet stripping apparatus. 3,695,756, Cl. 355-3.000.

Smith, Robert Earl: *See—*
Stevens, Harry G.; and Smith, Robert Earl, 3,695,468.

Smith, Thomas C., to Micro-Poise Engineering & Sales Company. Universally tiltable static balance testing apparatus with adjustable work gripping mechanism. 3,695,114, Cl. 73-485.000.

Smith, Victor Frederick, to Davey, F. W., and Company Proprietary Limited. Liquid pressure accumulator systems. 3,695,296, Cl. 138-30.000.

Smith-Schreyer & Assoc., Inc.: *See—*
Smith, Donald J.; and Foster, Seth, 3,696,320.

Smyth, James A.; and Whitaker, William T., to Zippo Manufacturing Company. Key connector. 3,695,074, Cl. 70-456.00r.

Smyth, Nelda Marjorie: *See—*
Forgione, Peter Salvatore; and Smyth, Nelda Marjorie, 3,695,999.

Snyder, Frank M. Stabilized antibiotic and method. 3,696,189, Cl. 424-38.000.

Societa Farmaceutical Italia: *See—*
Cassinelli, Giuseppe; Cotta, Ernesto; Pennella, Paolo; and Faustini, Remo, 3,696,194.

Societe Anonyme des Usines Chausson: *See—*
Chartet, Andre, 3,694,899.
Chartet, Andre, 3,695,347.

Societe Anonyme dite: CEFILAC: *See—*
Pommier, Pierre, 3,694,889.

Societe Anonyme pour l'Etude et l'Exploitation: *See—*
Aupoix, Marcel; and Culand, Andre, 3,694,914.

Societe de l'Aerotrain: *See—*
Cruchant, Serge Alfred Joseph, 3,695,383.
Schmitt, Henri Francois Marie; and Marande, Claude, 3,695,382.

Societe en nom Collectif Science Union et Cie Societe Francaise de Recherche Medicale: *See—*
Beregi, Laszlo; Hugon, Pierre; and Desnoyers, Pierre, 3,696,117.

Societe Generale de Constructions Electriques et Mecaniques (Alsthom): *See—*
Vallet, Guy, 3,695,043.

Societe Industrielle Bull-General Electric: *See—*
Lee, Elsie Chang; and Societe Industrielle Bull-General Electric, 3,695,541.

Societe Industrielle Generals de Mecanique Appliquee S.I.G.M.A.: *See—*
Vuaille, Andre, 3,695,244.

Societe Nationale d'Etude et de Construction de Moteurs d'Aviation: *See—*
Greiner, Gerard, 3,695,038.

Societe Rhodiaceta: *See—*
Bolliand, Robert, 3,696,185.

Soeda, Shigeki; and Nemoto, Hidetaro, to Nippon Kokan Kabushiki Kaisha. Reciprocating mold continuous casting apparatus. 3,695,341, Cl. 164-260.000.

Sogabe, Ichita: *See—*
Okada, Masashi; and Sogabe, Ichita, 3,695,381.

Sollars, Richard L.: *See—*
Sprando, Anthony E.; and Sollars, Richard L., 3,694,912.

Solomka, Monroe M.; and Fernandez, Gabriel Puente, to Dow-Unquinesa S.A. Process of preparing titanium pigment of improved resistance to photo-reduction. 3,695,907, Cl. 106-300.000.

Sonoco Products Company: *See—*
Corning, Robert C., Jr., 3,695,971.

Sony Corporation: *See—*
Miyaoka, Senri, 3,696,261.
Uemura, Saburo, 3,696,218.

Sorensen, Robert L.; and Casanova, John, to Time Incorporated. Molding a plastic printing plaque. 3,695,807, Cl. 425-407.000.

Sorenson, Wayne P., to Kimberly-Clark Corporation. Adhesive curing device. 3,694,927, Cl. 34-121.000.

Soulakis, George: *See—*
Baynes, William R.; La Branche, Harvey W.; and Soulakis, George, 3,695,513.

Sourbutts, Stanley: *See—*
Oeppen, Brian; Edmondson, John; and Sourbutts, Stanley, 3,695,816.

Southern Laminating Co.: *See—*
Kuhns, Frederick S., 3,695,966.

Soyland, Ingebret; and Soyland, Kristian. Means for regulating power for pumps. 3,695,783, Cl. 417-216.000.

Soyland, Kristian: *See—*
Soyland, Ingebret; and Soyland, Kristian, 3,695,783.

Space Research Corporation: *See—*
Bull, Gerald V.; and Palacio, Luis M., 3,695,181.

Spaiches, Albert E., to Schlegel Manufacturing Company, The. Window glass glazing system. 3,694,985, Cl. 52-400.000.

Spangler, Paul J.; and Morgan, Thomas E., to International Telephone and Telegraph Corporation. Insulated flat wire terminal. 3,696,322, Cl. 339-97.00c.

Speers, Robert Ray, to RCA Corporation. Method for forming isolated semiconductor devices. 3,695,956, Cl. 156-11.000.

Spencer, Dana E.: *See—*
Kronman, Seymour; Spencer, Dana E.; and Henderson, Larry D., 3,695,141.

Sperry Rand Corporation: *See—*
Kaske, Alan D.; and Sauter, Gerald F., 3,696,349.
Ross, Gerald F.; and Maguire, Hugh C., 3,696,359.
Thomas, William G., 3,695,205.

Spindler, Siegfried W., to Nagele, Karl F., Feinmaschinenbau. Slide fastener stringer. 3,694,868, Cl. 24-205.10c.

Spir-L-OK Industries Limited: *See—*
Hale, Reginald D., 3,694,892.

Splawinski, Thaddeus M. Multi-purpose vehicle. 3,695,375, Cl. 180-29.000.

Sprando, Anthony E.; and Sollars, Richard L., to Textronix, Inc. Manufacturing an electrical relay. 3,694,912, Cl. 29-602.000.

Spring Mills, Inc.: *See—*
Whitehead, Alvin C., 3,695,531.

Spyropopoulos, Constantine G., to Beckman Instruments, Inc. Sample cell holder for radiant energy analyzers. 3,695,772, Cl. 356-246.000.

Squibb, E. R., & Sons: *See—*
Levine, Seymour D., 3,696,109.

Squibb, E. R., and Sons, Inc.: *See—*
Hill, John A.; and La Via, Anthony L., 3,695,898.

St. John, Dara Derrick Phiroz: *See—*
Fitch, Stanley Frederick; and St. John, Dara Derrick Phiroz, 3,696,003.

Staats, William R.: *See—*
Rohrs, Marvin K.; Neary, Robert J.; Rosenberg, Robert B.; Kardas, Alan; and Staats, William R., 3,695,250.

Stade, Gerhard, to Lindner, Herbert, G.m.b.H., Firma. Worm drive with cylindrical worm. 3,695,119, Cl. 74-427.000.

Staffin, Herbert Kenneth; and Staffin, Robert, to Hercules Incorporated, mesne. Apparatus for drying particulate solids. 3,694,924, Cl. 34-10.000.

Staffin, Robert: *See—*
Staffin, Herbert Kenneth; and Staffin, Robert, 3,694,924.

Staley, A. E., Manufacturing Company: *See—*
Smith, David R., 3,696,082.

Stalker, James E., to Home Metal Products Company. Kitchen hood ventilator. 3,695,164, Cl. 98-115.00k.

Standard Kollsman Industries, Inc.: *See—*
Gossard, Thomas F., 3,696,302.

Standard Oil Company: *See—*
Thompson, Donald F.; and Quartermus, George D., 3,695,923.

Stapleton, Thomas T., to General Motors Corporation. Apparatus for producing an interference pattern. 3,695,749, Cl. 350-163.000.

Stark, John E.; and Vanoostveen, Adrian G., to Ford Motor Company. Method of expanding a pliable material. 3,696,186, Cl. 264-292.000.

Stark, Marvin L., to Armco Steel Corporation. Means for regulating the escape of wire from a dead block onto an accumulator. 3,695,543, Cl. 242-82.000.

Starr, John E.: *See—*
Hiller, Gary L.; Ulbing, Cynthia G.; and Starr, John E., 3,695,888.

Stastny, Edwin O.: *See—*
Baginski, Albert R.; Okada, David T.; and Stastny, Edwin O., 3,695,148.

Stauffer Chemical Company: *See—*
Hwa, Jesse C. H., 3,696,083.
Weil, Edward D., 3,695,925.

Steeg, Klaus: *See—*
Maucher, Paul; and Steeg, Klaus, 3,695,404.
Maucher, Paul; and Steeg, Klaus, 3,695,405.

Steel Company of Canada, Limited, The: *See—*
Garfield, James L., 3,695,083.

Steel, Margaret Lilian; and Cross, William Telford, to Imperial Chemical Industries Limited. Forming a pile on an article. 3,696,183, Cl. 264-164.000.

Steigerwald, Karl Heinz. Laminated imitation leather. 3,695,988, Cl. 161-109.000.

Stein, Hermann, to Didler-Werke AG. Refractory lining for the floor of metallurgical vessels. 3,695,604, Cl. 266-43.000.

Stein, William Harold. Tow handle for water skiing and the like. 3,695,210, Cl. 115-6.100.

Steiner American Corporation: *See—*
Bahnsen, Erwin B., 3,695,332.

Stelzer, William, to Kelsey-Hayes Company. Pressure modulating device for use in anti-skid brake system. 3,695,732, Cl. 303-21.00f.

Stember, Daniel L.: *See—*
Meyer, Roy E.; and Stember, Daniel L., 3,696,241.

Stephenson, Robert L.: *See—*
Lohr, Thomas E.; and Stephenson, Robert L., 3,695,696.

Stepin, Anatoly Loginovich: *See—*
Kalner, Veniamin Davidovich; Orlovsky, Anatoly Georgievich; Ostrovsky, Grigory Arkadievich; Ryskind, Alexandr Moiseevich; Semenov, Viktor Nikolaevich; Stepin, Anatoly Loginovich; Surov, Mikhail Andreevich; Shepelyakovsky, Konstantin Zakharovich; and Shklyaov, Isaak Nakhimovich, 3,696,225.

Stetter, Gunter; and Reinemann, Ullrich, to Messerschmitt-Bolkow-Blohm Gesellschaft mit beschrankter Haftung. Pyrotechnic radiator construction. 3,695,180, Cl. 102-87.000.

Steveninck, Johannes Van, to Shell Oil Company. Method and apparatus for burying a pipeline having fixed fluidization means. 3,695,049, Cl. 61-72.400.

Stevens, Harry G.; and Smith, Robert Earl. Work holder. 3,695,468, Cl. 214-340.000.

Stevens, J. P., & Co., Inc.: *See—*
Ross, Stanley E., 3,695,967.
Runton, Leslie A., 3,695,064.

Stielper, Henry J., to Black and Decker Manufacturing Co., The. Double insulated drill bit sharpener. 3,694,967, Cl. 51-73.00r.

Stievenart, Emile Frans, to Gevaert-Agfa N.V. Processing apparatus for use in diffusion transfer copying. 3,695,163, Cl. 95-89.00l.

Stile-Craft Manufacturers, Inc.: *See—*
Rogers, Gerald L., 3,695,516.

Stine, Laurence O., to Universal Oil Products Company. Petroleum crude oil conversion process. 3,696,024, Cl. 208-87.000.

Stockdale, Willis L., to Eastman Kodak Company. Film cartridge for preventing the end of a filmstrip from entering a cartridge chamber. 3,695,160, Cl. 95-31.0ca.

Stockel, Karl. Fluid cooled thrust nozzle for a rocket. 3,695,515, Cl. 239-127.100.

Stoffel, Robert W., to Allied Chemical Corporation. Controlled memory keeper. 3,695,697, Cl. 297-389.000.

Stohr, Rudolf, to Rieker, Justus, Dr., & Co. Inner shoe for footwear. 3,694,940, Cl. 36-10.000.

Stoker, Carl B., Jr., to Goodyear Tire & Rubber Company, The. Package with transparent window. 3,695,417, Cl. 206-45.310.

Stouffer, Ronald, to Bowles Fluidics Corporation. Fluid driven pneumatic displays. 3,695,607, Cl. 272-8.00d.

Stoy, Erich: *See—*
Leifeld, Klaus; Wochnik, Josef; and Stoy, Erich, 3,695,082.

STP Corporation: *See—*
Wright, Sheldon A., 3,696,042.

Stroble, Carl P., to Allegheny Ludlum Industries, Inc. Iron cobalt vanadium alloy. 3,695,944, Cl. 148-31.550.

Strom, Sven Olof Erik, to Alfa-Laval AB. Milking system. 3,695,231, Cl. 119-14.110.

Strong, Jerry G., to Mobil Oil Corporation. Use of 2-aryl-3-alkylaminoacrylonitriles as fungidices. 3,696,199, Cl. 424-304.000.

Stuck, Klaus, to Ehrenreich, A., & Cie. Ball joint for omni-directional motion attachments. 3,695,650, Cl. 287-88.000.

Stuck, Klaus, to Ehrenreich, A., & Cie. Ball joint with cover plate. 3,695,651, Cl. 287-87.000.

Stumpf, Robert J., to Kimberly-Clark Corporation. Separable clasp containing high-loft, non woven fabric. 3,694,867, Cl. 24-204.000.

Sturgeon, Robert G., to Barnes-Hind Pharmaceuticals, Inc., mesne. Contact lens case. 3,695,280, Cl. 134-166.00r.

Sturm, Rolland G.: *See—*
Rodgers, Edward J.; and Sturm, Rolland G., 3,695,255.

Sugawara, Katsuyuki: *See—*
Okuda, Kensuke; Yoshida, Tadaaki; and Sugawara, Katsuyuki, 3,694,862.

Sugawara, Tsunenori; Shibuya, Teiji; Miyakado, Satoru; and Mase, Jiro, to Nippon Kokan Kabushiki Kaisha. Charging apparatus for the furnace. 3,695,466, Cl. 214-37.000.

Sugaya, Hiroshi; and Kanai, Kenji, to Matsushita Electric Industrial Co., Ltd. Scanning magnetic head. 3,696,216, Cl. 179-100.20c.

Sugihara, Kanji: *See—*
Wakabayashi, Takashi; Hozumi, Shiro; and Sugihara, Kanji, 3,695,870.

Sugisawa, Hiroshi, to Canadian Patents and Development Limited. Preservation of volatile foodstuff flavours. 3,695,896, Cl. 99-140.00r.

Sullivan, Norman M., to Rapistan Incorporated. Baggage handling system. 3,695,462, Cl. 214-16.00b.

Sulzer Brothers Limited: *See—*
Sharan, Harendra Nath, 3,695,817.

Summerlin, Frederick A.: *See—*
Alvi, Zia R.; Heslop, Victor L.; and Summerlin, Frederick A., 3,695,088.

Summers, Thomas W., to Brown & Williamson Tobacco Corporation. Piston type cigarette filter. 3,695,274, Cl. 131-10.00a.

Sundbeck, Edward H., to Monsanto Company. Apparatus for drawing thermos plastic filaments in a high temperature gas vortex. 3,694,872, Cl. 28-71.300.

Sunderland, Stephen; and Whittam, Thomas V., to Laporte Industries Limited. Preparation of crystalline synthetic zeolites. 3,695,837, Cl. 423-328.000.

Suozzo, Leonard S. Thermo-electromechanical multi-function support device. 3,695,564, Cl. 248-59.000.
Surman, Albert A. Theft-deterrent merchandising display apparatus. 3,695,452, Cl. 211-4.000.
Surov, Mikhail Andreevich: *See—*
Kalner, Veniamin Davidovich; Orlovsky, Anatoly Georgievich; Ostrovsky, Grigory Arkadievich; Ryskind, Alexandr Moiseevich; Semenov, Viktor Nikolaevich; Stepin, Anatoly Loginovich; Surov, Mikhail Andreevich; Shepelyakovsky, Konstantin Zakharovich; and Shklyaov, Isaak Nakhimovich, 3,696,225.
Suverneva, Taisia Georgievna: *See—*
Gertsen, Petr Petrovich; and Suverneva, Taisia Georgievna, 3,695,828.
Suzuki, Munehiko; Hosokawa, Etsuo; Waki, Misao; and Fukushima, Masatada, to Showa Electric Wire & Cable Co., Ltd. Aromatic polyamide-imides soluble in phenolic solvents and process for producing same. 3,696,077, Cl. 260-78.0tf.
Suzuki, Shigenori: *See—*
Ozawa, Tokuji; Uyeda, Mikio; Hashimoto, Ryosuke; and Suzuki, Shigenori, 3,696,166.
Svensson, Olof: *See—*
Ling, Bernt; Persson, Anders; and Svensson, Olof, 3,694,936.
Swanson, Roger I., to Dake Corporation. Method and means for indicating tension. 3,696,412, Cl. 340-421.000.
Sweetheart Plastics, Inc.: *See—*
Warner, Robert J., 3,695,486.
Swenson, Henry F. Grinding wheel dressing apparatus. 3,695,249, Cl. 125-11.0cd.
Swithenbank, Joshua: *See—*
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Szupillo, Raymond E. Thin films of alpha Fe_2O_3 and method of forming. 3,695,908, Cl. 117-8.000.
Szymanski, Ronald. Dual purpose luminous headlight safety ring and fog lens attachment means. 3,696,238, Cl. 240-46.590.
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Tachikawa, Ryuji; Takagi, Hiromu; Kamioka, Toshiharu; Fukunaga, Mitsunobu; Kawano, Yoichi; and Miyadera, Tetsuo, to Sankyo Company Limited. Benzodiazepinium salts and process for preparing the same. 3,696,094, Cl. 260-239.30d.
Taconelli, William B., to Ionics, Incorporated. Membrane support. 3,695,444, Cl. 210-321.000.
Tada, Yoshiharu; and Sawada, Minoru, to Diesel Kiki Kabushiki Kaisha. Electronic governer for fuel-injection type internal combustion engines. 3,695,242, Cl. 123-102.000.
Tafapolsky, Bernard, to Gillette Company, The. Processes for sharpening razor blades. 3,696,013, Cl. 204-129.550.
Taguchi, Naoyoshi. Gas detecting device. 3,695,848, Cl. 23-254.00e.
Takada, Takezo, to Takata Kojyo Co., Ltd. Safety belt retractor reel locking mechanism. 3,695,546, Cl. 242-107.400.
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Taki, Toshio; and Matsunaga, Toshio, to Japan Steel Works Ltd. Snagger for a continuous winding machine. 3,695,528, Cl. 242-25.000.
Tallman, Charles V., to United States of America. Complaint suspension cable. 3,696,325, Cl. 340-2.000.
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Tanaka, Satoru; and Hasimoto, Kazunori, to Eisai Kabushiki Kaisha. Certain hyoscyaminium compounds. 3,696,110, Cl. 260-292.000.
Taneda, Yasuo; Naka, Kiyomi; and Horike, Akihiro, to Teijin Limited. Photo-polymerizable resin compositions. 3,695,877, Cl. 96-35.100.
Tanner, Hal W., Jr.: *See—*
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Tartra Corporation: *See—*
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Taylor, Donald: *See—*
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Taylor, George F. Food processing apparatus. 3,695,273, Cl. 130-30.00g.
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Taylor, John B. M., to TRW Inc. Turbine blade. 3,695,778, Cl. 416-92.000.
Taylor, Michael P., to Fiber Industries, Inc. Flange false twist textured nylon. 3,695,026, Cl. 57-140.00r.
Taylor, Philip W., to Taylor Industries, Inc. Fastener installation. 3,695,499, Cl. 227-52.000.
Taylor, Richard Francis, to Anglo-Transvaal Consolidated Investment Company Limited. Rotary impact rock breaking equipment. 3,695,724, Cl. 299-69.000.
Teague, Henry E.: *See—*
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Termomeccanica Italiana S.p.A., mesne: *See—*
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Tesoro, Giuliana C. Process for the chemical modification of polymers containing active hydrogen atoms by reacting such with a sulfonamide compound. 3,696,092, Cl. 260-231.00a.
Teti, John, to Du Pont de Nemours, E. I., and Company. Process for polymer recovery. 3,696,058, Cl. 260-2.300.
Texaco Inc.: *See—*
Cole, Edward L.; and Hess, Howard V., 3,696,021.
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Therachemie Chemisch Therapeutische Gesellschaft mbH: *See—*
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Thien, Gerhard; and Fachbach, Heinz, to Hans List. Sound-proofing component. 3,695,386, Cl. 181-33.00k.
Thiokol Chemical Corporation: *See—*
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Thomas, Mary R.: *See—*

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Thomas, Royal David, Jr.; and Norcross, James E., to Arcos Corporation. Pressure vessel and method of making. 3,696,228, Cl. 219-76.000.
Thomas, William G., to Sperry Rand Corporation. Combination lever ships steering system. 3,695,205, Cl. 114-144.00r.
Thompson, Arnold M. Croquet wicket assembly. 3,695,610, Cl. 273-56.000.
Thompson, Cullen R., to Shell Oil Company. Mining ventilation method. 3,695,714, Cl. 299-12.000.
Thompson, Donald F.; and Quartermus, George D., to Standard Oil Company. Composite sheet. 3,695,923, Cl. 117-76.00f.
Thompson, Ray E.: *See—*
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Time Incorporated: *See—*
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Timmers, Edwin F. Wedge cutting jig. 3,695,317, Cl. 143-51.00a.
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Titt, Georg. Infinitely variable friction mechanism. 3,695,120, Cl. 74-690.000.
Tobey, Hubert E.; Moller, George O.; and Twiford, Richard L., to International Telephone and Telegraph Corporation. Conveying system and apparatus for feeding soft cake products. 3,695,411, Cl. 198-29.000.
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Torazza, Giovanni, to Fiat Societa per Azioni. Fuel tank ventilation in motor vehicles. 3,695,243, Cl. 123-136.000.
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Trofimow, Alex. Vinylidene chloride copolymer latex coating composition. 3,696,067, Cl. 260-28.50d.
Troxler, Franz. 4-(2-Hydroxy-3-aminopropoxy)-indole derivatives. 3,696,120, Cl. 260-326.14r.
Troxler, Franz, to Sandoz Ltd. 4-(2-Hydroxy-3-aminopropoxy)-indole proproxy)-indole derivatives. 3,696,121, Cl. 260-326.150.
Trudel, John L. Cribbage boards and like peg-board devices. 3,695,512, Cl. .
Trump, Norman M., to Mack Trucks, Inc. Restraint device for vehicle cab sleeper bunk. 3,695,698, Cl. 297-390.000.
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Tsuda, Yoshizo; and Yamamoto, Akinori, to Toray Industries, Inc. Copolyamide from (a) dodecamethylene diamine, (b) hexamethylene diamine, (é) terephthalie acid and (d) adipic acid. 3,696,074, Cl. 260-78.00r.
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Tuberman, Arthur H. Method and apparatus for pointing tubes. 3,695,087, Cl. 72-402.000.
Tucker, Henry G.; and Donoski, Paul J., to Remington Arms Company, Inc. Elastic band type projecting device. 3,695,247, Cl. 124-17.000.
Tufts, Donald W.; Burt, Ralph E.; Davis, Victor I., Jr.; Queenan, James F.; Maloon, Richard A.; and Waterman, David W., to Sanders Associates Inc. Digital filter using weighting. 3,696,235, Cl. 235-156.000.
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Tuuha, Rolf Erik. Drum barker. 3,695,319, Cl. 144-208.00b.
Twidall, William H.; and Byrnls, Mark K., to Massey-Ferguson Industries, Limited. Deflictor arrangement for single or double windrow laying, convertible table for swathers. 3,695,015, Cl. 56-181.000.
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Uchida, Kinji; Mogi, Koya; and Yokotsuka, Tamotsu. Method of separating and collecting flavor components contained in foods. 3,695,897, Cl. 99-140.00r.
Uemura, Saburo, to Sony Corporation. Magnetic flux-responsive heads. 3,696,218, Cl. 179-100.2cf.
Uerlichs, Johannes; and Muller, Rudolf, to Rappold, Hermann, & Co. GmbH. Shut off valve of large diameter particularly a hot-blast slide valve. 3,695,286, Cl. 137-340.000.
Uhde, Friedrich, G.m.b.H.: *See—*
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Uhlig, Albert R., to Owens-Illinois, Inc. Method and apparatus for deflashing plastic articles. 3,695,109, Cl. 83-37.000.
Ujue, Akira. Method and apparatus for quenching a tubelar shaped structure. 3,695,598, Cl. 266-4.00a.
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Vacha, Fred. Glare shield. 3,695,658, Cl. 296-97.00c.
Vadnie, Marlynn D. Skirting for mobile homes. 3,694,979, Cl. 52-169.000.
Valbona, Bruno M.; Conlon, William J.; and Voglesonger, Harry M., to Dynamics Corporation of America. Vacuum cleaner. 3,695,006, Cl. 55-274.000.
Vallet, Guy, to Societe Generale de Constructions Electriques et Mecaniques (Alsthom). Float container for an automatic constant downstream level gate. 3,695,043, Cl. 61-22.000.
Van Brunt, George H. Drip coffee maker. 3,695,168, Cl. 99-306.000.
Van Der Roer, Humphrey Alphons Victor. Machine for printing on cups and the like. 3,695,176, Cl. 101-39.000.
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Vanderlaan, Robert Dale. Reciprocating pump. 3,695,785, Cl. 417-400.000.
Vanderveen, John W., to Phillips Petroleum Company. Nozzle structure and arrangement for producing high octane alkylate. 3,696,168, Cl. 260-683.580.
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Verman, Marvin. Modular row housing. 3,694,977, Cl. 52-79.000.
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Vicini, Dino, to Mas Hydraulic & Vulcanizing Machine Co. S.r.l. Vertically closing press for injection molding thermoplastic, thermosetting and elastomeric materials. 3,695,809, Cl. 425-450.000.
Victa Limited: *See—*
Meyer, Dolph Allan; Phelps, Ross Leslie; Sykes, Edward Henry; Clipsham, Ian Sweet; Seidel, David Paul; Gray, Donald; and Ractivand, Theodore Demetrius, 3,694,855.
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Vielhauer, Harold G. Apparatus for physiological investigation. 3,695,253, Cl. 128-2.05p.
Vincenty, Henry E., to Euclid, Inc. Exhaust system for a load dumping vehicle. 3,695,708, Cl. 298-1.00h.
Vinsani, Mario: *See—*
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Virnoche, Paul R.: *See—*
Kufrin, Frederick W.; Virnoche, Paul R.; Allen, Donald J.; Gokey, Phillip E.; and Rose, Frederick A., 3,694,825.
Visschedijk, Gerhardus Bernardus. Magnetic core storage matrices. 3,696,345, Cl. 340-174.0ma.
Vogelfanger, Elliot A., to Celanese Corporation. Formation of cast films of aromatic polyamides. 3,696,076, Cl. 260-78.00r.
Voglesonger, Harry M.: *See—*
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Volunteer Enterprises, Inc.: *See—*
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Von Behren, Norvell E. Word selecting device and method. 3,694,944, Cl. 40-70.00r.
Von Hornstein, Wolf Freiherr; Richt, Hubert O.; and Liebl, Albert. Tape tension control means with sensing levers, particularly for magnetic sound recorders. 3,695,549, Cl. 242-189.000.
von Konig, Anita: *See—*
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Von Konorring, Enar Sixten. Floating body. 3,694,837, Cl. 9-311.000.
Vondracek, Charles H.; and Dunlap, Anne B., to Westinghouse Electric Corporation. Steam chamber coatings. 3,694,942, Cl. 38-77.830.
Vosbikian, James T.: *See—*
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Vosbikian, Joseph; and Vosbikian, James T., to Hardware & Industrial Tool Co., Inc. Cabinet with jam switch and alarm system. 3,696,374, Cl. 340-274.000.
Voss, Joseph A.; and Johnson, Carl W., said Voss assor. to Kimberly-Clark Corporation. Reinforced hygienic medium applicator tubes and methods for fabricating same. 3,695,970, Cl. 156-272.000.
Vrijma, Berend, to Calsilox S.A. Apparatus for cutting a block of plastic material. 3,695,129, Cl. 83-5.000.
Vuaille, Andre, to Societe Industrielle Generals de Mecanique Appliquee S.I.G.M.A. Fuel regulating devices for internal combustion engines. 3,695,244, Cl. 123-140.0vs.
W & M Automation Karl Muller, Firma: *See—*

Jacksch, Bruno, 3,695,408.
Wacher, Paul, to General Telephone & Electronics Laboratories, Incorporated. Solid state light source with optical filter containing metal derivatives of tetraphenylporphin. 3,696,263, Cl. 313-108.00d.
Wacker-Chemie G.m.b.H.: *See—*
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Wade, Glen: *See—*
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Wagenblast, Richard K.: *See—*
Dreckmann, Hubert; Wilson, Charles B.; and Wagenblast, Richard K., 3,696,290.
Wagensommer, Joseph, to Esso Research and Engineering Company. Process for preparing copolymers of ethylene and alpha-olefins. 3,696,086, Cl. 260-80.780.
Wagner, George, to Hooker Chemical Corporation. Process for textile treatment and treated textile. 3,695,924, Cl. 117-76.00t.
Wakabayashi, Takashi; Hozumi, Shiro; and Sugihara, Kanji, to Matsushita Electric Industrial Co., Ltd. Process of producing a latent image. 3,695,870, Cl. 96-1.00e.
Waki, Misao: *See—*
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Walk, George A.; and Jones, Clifford V., to Kennecott Copper Corporation. Replaceable insert for tuyere pipes of metal-refining furnaces. 3,695,603, Cl. 266-41.000.
Walker, Grant W.; Ford, Duane B.; Meinzer, Lester N.; and Larsen, Reid S., to Dyanamics Research and Manufacturing, Inc. Shock absorbing structure. 3,695,583, Cl. 256-1.000.
Walker, James Donald, to Chicago Bridge & Iron Company. Deep tank aeration using eductor tubes of elongate cross-section. 3,696,029, Cl. 210-14.000.
Walker, Robert G.; and Hill, Donald E., to Industra Products, Inc. Wedgemaker. 3,694,887, Cl. 29-205.00e.
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Wall, Thomas P. Antisnoring device. 3,696,377, Cl. 340-279.000.
Wallace, Archie C. Time controlled alarm system having actuator moving along rotating shaft. 3,696,381, Cl. 340-309.40r.
Wallen, Bengt, to Allmanna Svenska Elektriska Aktiebolaget. Means for electrolytically depositing metal on an object or for anodic oxidation of an object. 3,696,017, Cl. 204-195.00r.
Wallgren, Harald Anton Ake, to Aktiebolaget Electrolux. Valve structure for controlling flow of liquid into a pneumatic liquid disposal system. 3,695,284, Cl. 137-188.000.
Wallington, Frederick L., to Owens-Illinois, Inc. Base sealer. 3,695,980, Cl. 156-583.000.
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Walraven, Thomas A.; Maropis, Nicholas; Elmore, William C.; and Devine, Janet, to Aeroprojects Incorporated. Contra-resonant anvil. 3,695,500, Cl. 228-1.000.
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Walther, Ludwig; Esser, Matthias; and Zilken, Helmut, to Zimmermann & Jansen GmbH, Firma. Gate valve including fluid operated locking device. 3,695,578, Cl. 251-94.000.
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Ward, Peter Manners, to Imperial Chemical Industries Limited. Heat sealable film and process for making same. 3,695,918, Cl. 117-47.00a.
Ward, Robert W., to Texas Instruments, Incorporated. Flash lamp Q-switched laser system. 3,696,309, Cl. 331-94.500.
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Warshaw, Stanley W. Expansion joint covering. 3,694,976, Cl. 52-58.000.
Wasemann, William A., to Westinghouse Electric Corporation. Laundry agent dispenser for agitator washers. 3,695,065, Cl. 68-17.00a.
Washecheck, Paul H., to Continental Oil Company. Process for peaking the oxidation products of 1-olefins. 3,696,134, Cl. 260-413.000.
Washio, Takaji; Tohi, Yasusuke; and Aizawa, Tatsuo, to Mita Industrial Company Limited. Electrophotographic apparatus for copying documents of various thicknesses. 3,695,754, Cl. 355-3.000.
Wasserlein, Henry George, Jr., to AMP Incorporated. Bundle tie device. 3,694,863, Cl. 24-16.0fb.
Watanabe, Hiroo; Yamamoto, Koosuke; Abe, Takeshi; and Kawamata, Motoo, to Mitsui Toatsu Chemicals, Incorporated. Method of treating sodium bicarbonate recovered from adiponitrile producing reaction solutions to recover sodium carbonate and organic substancs deposited thereon. 3,695,830, Cl. 23-63.000.
Watanabe, Tamotsu, to Nippon Kogei Kogyo Company, Ltd. Method and system for removing particles of floating dusts produced upon an excavation of a tunnel. 3,695,001, Cl. 55-2.000.
Watanuki, Toshio, to Midori-Kai Co., Ltd. Hemispherical motion picture screen. 3,695,751, Cl. 352-70.000.
Waterman, David W.: *See—*
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Watts, Robert Z.; and Weiss, Robert L., to International Business Machines Corporation. Signal analysis. 3,696,341, Cl. 340-172.500.
Watts, Woodrow H.; and Bartlett, George A. Liquid dispensing apparatus and method. 3,695,314, Cl. 141-59.000.
Watz, Martin C., to Amheuser-Busch, Incorporated. Apparatus and process for measuring the amount of air in gaseous mixtures of carbon dioxide and air. 3,695,845, Cl. 23-232.00r.
Waukesha Bearings Corporation: *See—*
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Weber, Lawrence D.: *See—*
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Webster, Ronald B., to Gerber Scientific Instrument Company, The. Variable aperture photoexposure device. 3,695,154, Cl. 95-1.00r.
Weeks, Lloyd E., to Monsanto Company. Dental creams containing enzymes. 3,696,191, Cl. 424-50.000.
Weeks, Robert Hugh, to Du Pont de Nemours, E. I., and Company. Process for purification of fluoroperhalocarbon. 3,696,156, Cl. 260-653.000.
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Weil, Edward D., to Stauffer Chemical Company. Process for flameproofing textiles. 3,695,925, Cl. 117-93.310.
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La Barber, Joseph A., 3,695,781.
Weimer, Paul Kessler, to RCA Corporation. Signal transfer system for panel type image sensor. 3,696,250, Cl. 250-220.0mx.
Weisker, Alexander; and Smith, Raymond L., Jr., to C & M Manufacturing Company, mesne. Materials handling stacker positioning apparatus. 3,695,463, Cl. 214-16.40a.
Weiss, LeRoy. Adjustable pallet. 3,695,187, Cl. 108-54.000.
Weiss, Robert L.: *See—*
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Wenrich, Carl M.; and Downs, Bernard W., to Weld-Record Corporation. Stud welding gun method. 3,696,227, Cl. 219-99.000.
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Werner, Lawrence E., to Chrysler Corporation. Method of mounting an automobile engine. 3,694,895, Cl. 29-469.000.
Werts, Arthur P.; and Besser, John E., to Eastman Kodak Company. Polymerization inhibitors for vinyl monomers and unsaturated polyesters. 3,696,050, Cl. 252-403.000.
West, Jon R. Vehicle wheel immobilizing apparatus. 3,695,071, Cl. 70-225.000.
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Westphal, Bernd; and Kandler, Georg, to Motoren-und Turbinen-Union GmbH. Supporting device for pivotal guide blades in thermal turbo-machines. 3,695,777, Cl. 415-216.000.
Wetzel, William C.; and Long, Raymond W. Horn with buzzer. 3,696,410, Cl. 340-393.000.
Wheelabrator-Frye, Inc.: *See—*
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Wheelwright, Earl J., to United States of America, Atomic Energy Commission. Cation exchange conversion of hydroxylamine sulfate to hydroxylamine nitrate. 3,695,834, Cl. 23-102.000.
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White, William E., Jr., to Hydro Tech Services, Inc. Adjustable length coupling. 3,695,634, Cl. 285-31.000.
Whitehead, Alvin C., to Spring Mills, Inc. Textile bobbin and spindle assembly having a magnetic bobbin seater. 3,695,531, Cl. 242-46.210.
Whitehead, Bernard. Road markings. 3,696,237, Cl. 240-1.000.
Whitehurst, Joe R., to Warner & Swasey Company, The. Fluted roll slip drafting system. 3,694,861, Cl. 19-259.000.
Whitesel, Joseph C.: *See—*
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Whittam, Thomas V.: *See—*
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Widmer, Fritz, to Luwa AG. Wiped thin film evaporation and treatment apparatus. 3,695,327, Cl. 159-6.002.
Wiedeman, Oscar Fontaine; Saunders, Kenneth Worden; and O'Connor, Michael Niall, to American Cyanamid Company. Production of alkali metal ferrocyanide. 3,695,833, Cl. 423-367.000.
Wieland, Peter; and McGrath, James E. Process for the manufacture of acetylene compounds. 3,696,130, Cl. 260-397.500.
Wiesler, Mordechai; Martinonis, Virgil; and Macintyre, John S., to Teledyne, Incorporated. Die sorting system. 3,695,414, Cl. 198-108.000.
Wilfert, Karl. Motor vehicle body. 3,695,679, Cl. 296-91.000.
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Williams, Robert J., to Cadillac Products, Inc. Automobile seat cover. 3,695,692, Cl. 297-229.000.
Williams, Willie Vincent. Apparatus for rapidly splicing a multitude of thermoplastic yarn ends. 3,695,975, Cl. 156-433.000.
Wilson, Charles B.: *See—*
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Wincierz, Peter; Ruhle, Manfred; Kuchler, Heinz; Borgstedt, Hans Ulrich; and Bohm, Horst Otto. Vanadium-base alloy having a high creep-rupture strength and an improved resistance to corrosion. 3,695,866, Cl. 75-134.00v.
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Wintershall Aktiengesellschaft: *See—*
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Wippermann, Josef, to Heinge, Richard. Disconnectable rigid connection of mounting parts especially furniture walls. 3,695,655, Cl. 287-20.92e.
Wirtz, Peter; Jacobowsky, Armin; and Mittler, Werner, to Knapsack Aktiengesellschaft. Process for reducing the concentration of 2-dichlorobutadiene-(1,3) in 1,2-dichloroethane recovered in the incomplete thermal cracking into vinyl chloride. 3,696,015, Cl.204-163.00r.
Wirz, Arno, to Heidelberger Druckmaschinen Aktiengesellschaft. Suction head in sheet feed systems for sheet processing machines. 3,695,606, Cl. 271-26.00r.
Wise, George G. Outboard motor theft alarm having switch actuated by motor clamp. 3,696,371, Cl. 340-275.00r.
Wise, Harold L.; Walters, Arley; and Cook, Ray G., to Shell Oil Company. Gas cleaning conduit. 3,695,844, Cl. 23-232.00c.
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Wolf, Adolf. Milling tool with individually adjusted cutters. 3,694,880, Cl. 29-105.000.
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Wood, Donald B.; and Kiel, Othar M., to Esso Production Research Company. Gravel pack method. 3,695,355, Cl. 166-295.000.
Wood, Harry G. Package assembly and cushion therefor. 3,695,421, Cl. 206-46.0fc.
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Yamamoto, Nobuo; Hatano, Tadao; Shimamura, Isao; and Iwano, Haruhiko. Imagewise exposed gelatin silver halide emulsion treated with pyruvic aldehyde hardener. 3,695,883, Cl. 96-50.000.

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Yang, Julie Chi-Sun, to Johns-Manville Corporation. Synthesis of pure mineral sphene in the form of uniformly sized particles. 3,695,836, Cl. 23-110.00r.

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Yokoi, Hiroshi; and Fukumuro, Hiroshi, to Kokusai Denshin Denwa Kabushiki Kaisha. Cassegrain antenna with absorber to reduce back radiation. 3,696,436, Cl. 343-782.000.

Yokotsuka, Tamotsu: *See—*
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Youngblood, Donald A. Collapsible screen assembly combination visual and sound apparatus. 3,695,746, Cl. 350-124.000.

Yuzawa, Masaharu. Purification device for exhaust gas. 3,695,005, Cl. 55-255.000.

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Zucca, Mark L. Device for facilitating attachment of truck converter and trailer. 3,695,630, Cl. 280-474.000.

Zucker, Henry, to Bell Telephone Laboratories, Incorporated. Offset parabolic reflector antenna. 3,696,435, Cl. 343-779.000.

Zuppiger, Paul, to Battelle Memorial Institute. Sliders and locking arrangements for integrator platforms. 3,695,183, Cl. 104-25.000.

LIST OF DEFENSIVE PUBLICATIONS

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Coffey, William F. Pyrazolone derivatives. T903,021, 10–3–72, Cl. 96—100.

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Dempski, Robert E. Laser process of printing tablets and capsules. T903,014, 10–3–72, Cl. 219—121.

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Katstra, Richard D., to Continental Oil Co. Phosphorus-free cleaning formulations. T903,009, 10–3–72, Cl. 252—559.

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Kottenhahn, Alfred P., to E. I. du Pont de Nemours & Co. Recovering values from monovinylacetylene catalyst tars. T903,002, 10–3–72, Cl. 23—312.

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Machiele, Delwyn E. Photographic couplers. T903,025, 10–3–72, Cl. 96—100.

McCabe, John M. Coating compositions. T903,008, 10–3–72, Cl. 117—161.

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Mitchell, Barry M. Continuous hydrogenation process. T903,003, 10–3–72, Cl. 260—583.

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Sharp, John O., and R. G. Devaney. Polyester compositions having high dielectric constants, films thereof and shaped articles. T903,013, 10–3–72, Cl. 260—40.

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101 3,695,078
208 3,695,079
239 3,695,080
243 3,695,082
254 3,695,081
285 3,695,083
321 3,695,077
348 3,695,084
383 3,695,085
391 3,695,086
402 3,695,087
405 3,695,088
430 3,695,089
450 3,695,090

CLASS 73
11 3,695,091
17R 3,695,093
40.5 3,695,094
61.1R 3,695,095
88.5R 3,695,096
113 3,695,097
117.1 3,695,098
117.3 3,695,099
141R 3,695,100
3,695,102
147 3,695,101
170A 3,695,103
194EM 3,695,104
211 3,695,105
231R 3,695,106
290R 3,695,107
3,695,108
343R 3,695,110
345 3,695,111
362AR 3,695,112
421 3,695,113
485 3,695,114
510 3,695,115

CLASS 74
2 3,695,116
89.22 3,695,117
243FC 3,695,118
427 3,695,119
690 3,695,120
753 3,695,121
864 3,695,122

CLASS 75
.5R 3,695,862
60 3,695,863
66 3,695,864
130R 3,695,865
134G 3,695,867
134V 3,695,866
206 3,695,868
211 3,695,869

CLASS 76
43 3,695,123

CLASS 81
121R 3,695,124
179 3,695,125

CLASS 82
36A 3,695,126
36R 3,695,127

CLASS 83
1 3,695,128
5 3,695,129
13 3,695,130
37 3,695,109
56 3,695,131
98 3,695,132
204 3,695,133
451 3,695,134
455 3,695,135
658 3,695,136

CLASS 84
1.01 3,696,201
1.03 3,696,200
312 3,695,137
470 3,695,138

CLASS 85
8.3 3,695,140
33 3,695,139

CLASS 89
1B 3,695,141
1.812 3,695,142
145 3,695,143

CLASS 91
41 3,695,144
390 3,695,145
478 3,695,146
498 3,695,147

CLASS 92
92 3,695,148
168 3,695,149
169 3,695,150

CLASS 93
53BF 3,695,151
80 Re.27,500

CLASS 94
23 3,695,152
31.3 3,695,153

CLASS 95
1R 3,695,154
4.5 3,695,155
3,695,156
10CE 3,695,158
10CT 3,695,157
10C 3,695,159
31CA 3,695,160
85 3,695,161
89L 3,695,163
89R 3,695,162

CLASS 96
1E 3,695,870
1.2 3,695,871
1.5 3,695,872
3,695,873
1.8 3,695,874
27 3,695,875
29 3,695,876
3,695,881
35.1 3,695,877
40 3,695,878
48 3,695,879
50 3,695,883
52 3,695,880
68 3,695,882
76C 3,695,884
91N 3,695,886
91R 3,695,885
115R 3,695,887
123 3,695,888

CLASS 98
115K 3,695,164

CLASS 99
63 3,695,889
78 3,695,890
98 3,695,891
107 3,695,892
116 3,695,893
134R 3,695,894
136 3,695,895
140R 3,695,896
3,695,897
141A 3,695,898
150 3,695,899
174 3,695,900
176 3,695,901
3,695,902
3,695,904
192TT 3,695,903
236C 3,695,165
257 3,695,166
306 3,695,168
335 3,695,169
356 3,695,905
386 3,695,170
404 3,695,171

CLASS 100
45 3,695,172
74 3,695,173
95 3,695,174
193 3,695,175

CLASS 101
39 3,695,176

CLASS 102
4 3,695,177
28R 3,695,178
70.2R 3,695,179
87 3,695,180
93 3,695,181

CLASS 104
25 3,695,183
58 3,695,182
105 3,695,184
176 3,695,185

CLASS 105
171 3,695,186

CLASS 106
12 3,695,906
300 3,695,907

CLASS 108
54 3,695,187
58 3,695,188
65 3,695,189
91 3,695,190

CLASS 109
84 3,695,191

CLASS 110
8A 3,695,192

CLASS 111
93 3,695,193

CLASS 112
121.15 3,695,194
121.29 3,695,195
164 3,695,196
177 3,695,197
203 3,695,198
221 3,695,199
243 3,695,200

CLASS 113
121A 3,695,201

CLASS 114
43.5 3,695,202
50 3,695,203
66.5P 3,695,204
144R 3,695,205
206A 3,695,206
206R 3,695,207
211 3,695,208
230 3,695,209

CLASS 115
6.1 3,695,210
26 3,695,211

CLASS 116
8 3,695,212
28 3,695,213
63P 3,695,214
124R 3,695,215

CLASS 117
8 3,695,908
17.5 3,695,909
33.3 3,695,910
34 3,695,911
36.2 3,695,912
36.9 3,695,913
46FA 3,695,914
47A 3,695,915
3,695,917
3,695,918
47R 3,695,916
52 3,695,919
69 3,695,920
72 3,695,921
76F 3,695,922
3,695,923
76T 3,695,924
93.31 3,695,925
136 3,695,926
212 3,695,927
3,695,928
218 3,695,929
235 3,695,930

CLASS 118
3 3,695,216
49.5 3,695,217
50 3,695,218
3,695,219
61 3,695,220
203 3,695,221
207 3,695,222
217 3,695,223
239 3,695,225
326 3,695,226
415 3,695,227
620 3,695,228
637 3,695,224

CLASS 119
4 3,695,229
14.11 3,695,231
14.14 3,695,230
17 3,695,232
19 3,695,233
52B 3,695,234

CLASS 123
32EA 3,695,236
32R 3,695,235
43A 3,695,237
65PD 3,695,239
65E 3,695,238
73A 3,695,240
90.45 3,695,241
102 3,695,242
136 3,695,243
140MC 3,695,245
140VS 3,695,244

CLASS 124
11 3,695,246
17 3,695,247
30R 3,695,248

CLASS 125
11CD 3,695,249

CLASS 126
110R 3,695,250

CLASS 127
4 3,695,931
30 3,695,932
32 3,695,933

CLASS 128
2F 3,695,251
3,695,272
2V 3,695,252
2.05P 3,695,253
2.08 3,695,254
25B 3,695,255
75 3,695,256
76B 3,695,257
87R 3,695,258
92D 3,695,259
132D 3,695,260
142.2 3,695,261
145R 3,695,262
145.5 3,695,264
145.6 3,695,263
146.2 3,695,265
173H 3,695,266
192 3,695,267
283 3,695,268
284 3,695,269
285 3,695,270
335 3,695,271

CLASS 130
30G 3,695,273

CLASS 131
10A 3,695,274
171 3,695,275
191 3,695,276
235R 3,695,277

CLASS 132
53 3,695,278

CLASS 133
3 3,695,279

CLASS 134
1 3,695,934
166R 3,695,280

CLASS 136
13 3,695,935
122 3,695,936
146 3,695,937
173 3,695,938
176 3,695,939
181 3,695,940

CLASS 137
1 3,695,281
81.5 3,695,283
188 3,695,284
218 3,695,285
340 3,695,286
354 3,695,287
360 3,695,288
375 3,695,289
536 3,695,282
563 3,695,290
571 3,695,291
625.3 3,695,292
625.48 3,695,293
625.66 3,695,294
625.69 3,695,295

CLASS 138
30 3,695,296
3,695,297
3,695,298
94.3 3,695,299
3,695,300
97 3,695,301

CLASS 139
27 3,695,302
34 3,695,303
78 3,695,304
116 3,695,305
125 3,695,306

CLASS 140
71 3,695,310
93.4 3,695,307
3,695,308
93.6 3,695,311
124 3,695,309

CLASS 141
1 3,695,312
3,695,313
59 3,695,314
368 3,695,315

CLASS 143
32Q 3,695,316
51A 3,695,317

CLASS 144
35 3,695,318
208B 3,695,319
326 3,695,320

CLASS 145
50 3,695,321

CLASS 146
28R 3,695,322
81R 3,695,323

CLASS 148
1.6 3,695,941
6.15R 3,695,942
11.5A 3,695,943
31.55 3,695,944
103 3,695,945
111 3,695,946

CLASS 149
2 3,695,947
3,695,948
15 3,695,949
19 3,695,950
3,695,951
3,695,952
56 3,695,953

CLASS 151
41.74 3,695,324

CLASS 152
225 3,695,325
358 3,695,326

CLASS 156
3 3,695,954
11 3,695,955
3,695,956
72 3,695,957
3,695,958
79 3,695,959
89 3,695,960
122 3,695,961
148 3,695,962
3,695,963
161 3,695,964
187 3,695,965
190 3,695,966
209 3,695,967
216 3,695,968
251 3,695,969
272 3,695,970
275 3,695,971
293 3,695,973
324 3,695,972
415 3,695,974
433 3,695,975
435 3,695,976
441 3,695,977
506 3,695,978
517 3,695,979
583 3,695,980
584 3,695,981

CLASS 159
6W 3,695,327

CLASS 160
1 3,695,328
84 3,695,329
135 3,695,330
187 3,695,331
188 3,695,332

CLASS 161
5 3,695,982
7 3,695,993
63 3,695,986
67 3,695,987
71 3,695,983
93 3,695,984
109 3,695,988
129 3,695,985
160 3,695,989
168 3,695,990
176 3,695,991
178 3,695,992

CLASS 162
65 3,695,994
3,695,995
273 3,695,996

CLASS 164
35 3,695,333
49 3,695,334
97 3,695,335
98 3,695,336
100 3,695,337
181 3,695,338
213 3,695,339
246 3,695,340
260 3,695,341
268 3,695,342

CLASS 165
1 3,695,343
47 3,695,344
64 3,695,345
120 3,695,346
152 3,695,347

CLASS 166
.5 3,695,349
3,695,350
96 3,695,351
129 3,695,352
267 3,695,353
272 3,695,354
295 3,695,355
3,695,356
297 3,695,357
302 3,695,348
3,695,358
315 3,695,359

CLASS 171
58 3,695,360

CLASS 172
67 3,695,361

CLASS 173
2 3,695,362
43 3,695,363
57 3,695,364
109 3,695,365
134 3,695,366
163 3,695,367

CLASS 175
4.52 3,695,368
45 3,695,369
106 3,695,370
394 Re.27,498

CLASS 177
59 3,695,371

CLASS 178
5.4ST 3,696,202
27 3,696,204
88 3,696,203

CLASS 179
1SA 3,696,205
1N 3,696,206
1.5S 3,696,207
2A 3,696,209
5R 3,696,208
15BF 3,696,210
90BD 3,696,212
90B 3,696,211
100.1DR 3,696,215
100.2CF 3,696,218
100.2C 3,696,216
100.2D 3,696,214
3,696,217
100.2E 3,696,219
100.2Z 3,696,213
100.4R 3,696,220

CLASS 180
5R 3,695,372
14A 3,695,373
27 3,695,374
29 3,695,375
54R 3,695,376
66B 3,695,377
79.2R 3,695,378
103 3,695,379
104 3,695,380
112 3,695,381
116 3,695,382
127 3,695,383

CLASS 181
.5R 3,695,384
31B 3,695,385
33HC 3,695,387
33F 3,695,388
33G 3,695,395
33K 3,695,386

CLASS 182
22 3,695,389
129 3,695,390

CLASS 184
1E 3,695,391
6.28 3,695,392

CLASS 187
20 3,695,393
89 3,695,396

CLASS 188
32 3,695,394
65.4 3,695,397
73.6 3,695,398
187 3,695,399
291 3,695,400

CLASS 191
12.4 3,696,221

CLASS 192
8R 3,695,402
21 3,695,401
53E 3,695,403
70.18 3,695,404
106.2 3,695,405
107M 3,695,406
113B 3,695,407

CLASS 193
40 3,695,408

CLASS 194
4C 3,695,409

CLASS 195
28R 3,695,997
63 3,695,998
3,695,999
65 3,696,000
103.5R 3,696,001
139 3,696,002

CLASS 197
55 3,695,410

CLASS 198
29 3,695,411
34 3,695,412
40 3,695,413
108 3,695,414
110 3,695,415

CLASS 200
16R 3,696,222

CLASS 202
160 3,696,003
241 3,696,004

CLASS 203
35 3,696,005
62 3,696,006

CLASS 204
1T 3,696,007
67 3,696,008
72 3,696,009
99 3,696,010
105M 3,696,011
108 3,696,012
129.55 3,696,013
143M 3,696,014
163R 3,696,015
192 3,696,016
195R 3,696,017
266 3,696,018
290R 3,696,019
300 3,696,020

CLASS 206
45.14 3,695,416
45.31 3,695,417
45.33 3,695,418
45.34 3,695,419
46FC 3,695,421
46R 3,695,420
47R 3,695,422
56A 3,695,423
62R 3,695,424
65R 3,695,425
65S 3,695,426

CLASS 208
13 3,696,021
57 3,696,022
87 3,696,023
3,696,024
111 3,696,026
113 3,696,025
210 3,696,027
308 3,696,028

CLASS 209
44 3,695,427
73 3,695,428
156 3,695,429
160 3,695,430
421 3,695,431

CLASS 210
14 3,696,029
21 3,696,030
23 3,696,031
42 3,696,032
67 3,695,432
3,695,433
74 3,695,434
96 3,695,435
131 3,695,436
136 3,695,437
137 3,695,438
173 3,695,439
225 3,695,440
242 3,695,441
3,695,442
315 3,695,443
321 3,695,444
3,695,445
3,695,446
332 3,695,447
394 3,695,448
429 3,695,449
449 3,695,450
460 3,696,033
526 3,695,451

CLASS 211
4 3,695,452
14P 3,695,456
14 3,695,453
74 3,695,454
78 3,695,455
177 3,695,457
3,695,458

CLASS 214
1BT 3,695,461
1QD 3,695,460
1Q 3,695,459
16B 3,695,462
16.4A 3,695,463
16.6 3,695,464
37 3,695,465
3,695,466
147G 3,695,467
340 3,695,468
450 3,695,469
512 3,695,470
515 3,695,471
517 3,695,472
657 3,695,473
771 3,695,474

CLASS 215
9 3,695,475
3,695,476
40 3,695,477
52 3,695,478

CLASS 217
26.5 3,695,479

CLASS 219
10.49 3,696,223
10.57 3,696,224
10.79 3,696,225
62 3,696,226
76 3,696,228
85 3,696,229
99 3,696,227
121L 3,696,230
383 3,696,231
451 3,696,232
535 3,696,233

CLASS 220
9C 3,695,483
24GT 3,695,480
31S 3,695,481
46MS 3,695,482

CLASS 221
296 3,695,484

CLASS 222
68 3,695,485
162 3,695,486
430 3,695,487
570 3,695,488

CLASS 223
34 3,695,489
40 3,695,490
91 3,695,491
94 3,695,492
111 3,695,493

CLASS 224
4E 3,695,494
29R 3,695,495
36 3,695,496

CLASS 225
1 3,695,498
2 3,695,497

CLASS 227
52 3,695,499

CLASS 228
1 3,695,500
3 3,695,501
4 3,695,502

CLASS 229
2.5 3,695,503
3,695,514
7 3,695,504
37R 3,695,505
37 3,695,506
38 3,695,508
53 3,695,507

CLASS 233
30 3,695,509

CLASS 234
3,695,510
115 3,695,511

CLASS 235
90 3,695,512
92AC 3,696,234
151.34 3,696,236
156 3,696,235

CLASS 238
10E 3,695,513

CLASS 239
127.1 3,695,515
135 3,695,516
533 3,695,518
583 3,695,517

CLASS 240
1 3,696,237
46.59 3,696,238
52.3 3,696,239
73BJ 3,696,240
84 3,696,241
3,696,242

CLASS 241
43 3,695,520
46B 3,695,519

CLASS 242
18DD 3,695,522
18A 3,695,521
18R 3,695,523
3,695,524
25A 3,695,525
3,695,526
3,695,527
3,695,528
26.3 3,695,529
27 3,695,530
46.21 3,695,531
46.4 3,695,561
55 3,695,532
3,695,533
55.01 3,695,534
55.19A 3,695,535
3,695,536
56.9 3,695,537
58.6 3,695,538
3,695,539
65 3,695,540
71.8 3,695,541
78.6 3,695,542
82 3,695,543
107R 3,695,544
107.4 3,695,545
3,695,546
129.51 3,695,547
150 3,695,548
189 3,695,549
191 3,695,550
194 3,695,551
198 3,695,552
199 3,695,553

CLASS 244
1SA 3,695,554
3.14 3,695,555
3.29 3,695,556
45R 3,695,557
83D 3,695,558
110C 3,695,559
155R 3,695,560

CLASS 246
121 3,696,243
242 3,696,244

CLASS 248
23 3,695,562
56 3,695,563
59 3,695,564
97 3,695,565
119R 3,695,566
188.6 3,695,567
223 3,695,568
235 3,695,569
397 3,695,570

CLASS 249
53 3,695,571
68 3,695,572
142 3,695,573
175 3,695,574

CLASS 250
49.5A 3,696,246
49.5E 3,696,245
83.3H 3,696,247
203R 3,696,248
220MX 3,696,250
220M 3,696,249

CLASS 251
5 3,695,576
61.4 3,695,577
94 3,695,578
174 3,695,579

CLASS 252
8.55R 3,696,035
8.8 3,696,034
49.9 3,696,036
62.2 3,696,037
62.51 3,696,039
62.9 3,696,038
87 3,696,040
99 3,696,041
153 3,696,042
3,696,043
180 3,696,044
182 3,696,045
186 3,696,046
188 3,696,047
392 3,696,048
3,696,049
403 3,696,050
425.5 3,696,051
428 3,696,052
437 3,696,053
511 3,696,054
519 3,696,055
525 3,696,056
544 3,696,057

CLASS 254
62 3,695,581
93HP 3,695,582

CLASS 256
1 3,695,583
13.1 3,695,584

CLASS 259
5 3,695,585
24 3,695,586
41 3,695,587
178R 3,695,588
185 3,695,575

CLASS 260
2.3 3,696,058
2.5HA 3,696,059
2.5B 3,696,060
2.5M 3,696,061
5 3,696,062
17R 3,696,063
17.2 3,696,064
17.4ST 3,696,065
18S 3,696,090
23.7H 3,696,066
28.5D 3,696,067
29.1B 3,696,068
41R 3,696,069
45.75C 3,696,071
45.8N 3,696,070
47EC 3,696,073
47EP 3,696,072
78TF 3,696,077
78L 3,696,075
78R 3,696,074
3,696,076
78S 3,696,078
78.5BB 3,696,081
78.5CL 3,696,079
78.5N 3,696,080
79 3,696,083
79.3R 3,696,084
80.3N 3,696,085
80.7S 3,696,086
80.8 3,696,082
85.1 3,696,087
3,696,088
156 3,696,089
210.5 3,696,091
231A 3,696,092
239BD 3,696,093
239.3D 3,696,094
239.3T 3,696,095
240E 3,696,097
240J 3,696,096
240R 3,696,098
244R 3,696,099
247.5R 3,696,100
248NS 3,696,101
251QA 3,696,102
268DR 3,696,104
268C 3,696,105
268R 3,696,103
3,696,106
287R 3,696,109
292 3,696,110
293.51 3,696,111
294.8F 3,696,112
295AM 3,696,113
305 3,696,114
307B 3,696,115
309 3,696,116
326.003 3,696,117
326.14R 3,696,119
3,696,120
326.15 3,696,121
326.9 3,696,118
332.3C 3,696,122
333 3,696,123
343.3 3,696,124
347.3 3,696,125
349 3,696,126
375B 3,696,127
376 3,696,128
397.3 3,696,129
397.5 3,696,130
397.6 3,696,131
3,696,132
412.8 3,696,133
413 3,696,134
439R 3,696,135
448A 3,696,136
448.2E 3,696,138
448.8R 3,696,137
464 3,696,140
473A 3,696,139
476R 3,696,141
488R 3,696,142
513R 3,696,143
514R 3,696,144
515R 3,696,145
3,696,146
526N 3,696,147
531R 3,696,148
533R 3,696,149
544F 3,696,150
553A 3,696,151
561N 3,696,152
583K 3,696,153
609F 3,696,154
642 3,696,155
648F 3,696,156
666PY 3,696,157
668R 3,696,158
3,696,159
674SA 3,696,107
675.5 3,696,164
677A 3,696,161
3,696,162
677H 3,696,160
677R 3,696,108
683D 3,696,163
3,696,165
683R 3,696,166
683.3 3,696,167
683.58 3,696,168
836 3,696,169
858 3,696,170
860 3,696,171
880R 3,696,172
899 3,696,173
923 3,696,174
3,696,175
986 3,696,176

CLASS 261
23A 3,695,589
36A 3,695,590
39D 3,695,591
50A 3,695,592
96 3,695,593

CLASS 263
6R 3,695,594
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246	3,695,772
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216	3,695,777
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189	3,695,780
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331	3,695,836
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90	3,695,812
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131	3,695,814
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